

Vol. III, No. 1

chem

JULY, 1943

355.5805
HE

ARMED FORCES CHEMICAL JOURNAL



UNIVERSITY OF ILLINOIS
LIBRARY-CHEMISTRY



THE COUNTRY OVER



IT'S COLUMBIA FOR ALKALIES AND RELATED CHEMICALS



Columbia's plants and those of its affiliate, Southern Alkali Corporation, are favorably located and are integrated with well organized distribution facilities.

Carefully controlled processes assure consistently high product standards . . . efficient handling and shipping procedures safeguard deliveries.

Equally important—Columbia policies contribute to enduring business relationships.

COLUMBIA

CHICAGO
NEW YORK

BOSTON
CINCINNATI
MINNEAPOLIS



CHARLOTTE

CHEMICALS

ST. LOUIS
CLEVELAND

PITTSBURGH
PHILADELPHIA
SAN FRANCISCO



PAINT • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

Armed Forces Chemical Journal

OFFICIAL PUBLICATION OF THE ARMED FORCES CHEMICAL ASSOCIATION

Room 523, 1129 Vermont Ave. N.W.

Washington 5, D. C.

LT. COL. HAROLD B. RODIER, *CmlC*, *Ret.*, Editor

Vol. III

JULY, 1948

No. 1

OFFICERS OF THE ARMED FORCES CHEMICAL ASSOCIATION

Honorary President

LUDLOW KING, Colonel, *CmlC*, *Inactive*

President

HARRY A. KUHN, USA, *Ret.*

First Vice-President

DR. WALTER E. LAWSON

Second Vice-President

RICHARD H. TURK
(Chairman of Finance Committee)

Third Vice-President

ELLIOTT MORRILL, Lt. Col., *Cml. Res.*
(Chair., Membership & Organization)

Fourth Vice-President

ALEX LEGGIN, Lt. Col., *Cml. Res.*
(Chairman of Publications)

Fifth Vice-President

ROY KULP, Edgewood Arsenal
(Chairman of Meetings & Conventions)

Sixth Vice-President

DR. WALTER R. KIRNER
(Chairman of Research & Development)

Seventh Vice-President

SAMUEL N. CUMMINGS, Col., *Cml. Res.*
(Chairman, War Mobilization Planning)

Secretary-Treasurer

FRED M. JACOBS

General Counsel

C. E. PLEDGER, JR., Major, *Cml. Res.*

Advertising Manager

JOSEPH SCHWIMER, Captain, *Cml. Res.*

Editor, Journal and News

HAROLD B. RODIER, Lt. Col. *CmlC. Ret.*



THE PICTURE ON THE COVER

COL. HARRY A. KUHN, USA, *Ret.*
President, Armed Forces Chemical Association

THE LIBRARY OF THE INDEX

SEP 14 1948

UNIVERSITY OF ILLINOIS

Air Gun for Testing Bombs	40
Association to Hold Open House	25
Benzol—How It's Chlorinated	57
Captain Byrne Comes Aboard	18
C.C.M.A.	35
Chapter News	59
Chemical Corps School	26
By Col. M. E. Barker	
Chemical Corps Technical Command	36
Chemical Warfare in World War II	32
Col. Creasy New R. & E. Chief	37
Col. King to Japan	42
Col. Loucks to EUCOM	38
Common Catalog for Armed Forces	52
Conversion of Smoke Generators	56
Directors-at-Large	22
Editorials	2
Flame Throwing Seabees	48
By Col. George F. Unmacht	
From Your National President	3
General Devers Addresses Association	13
General Nelson Speaks for Air Force	16
General Waitt Praises Work of A.F.C.A.	15
Industry's Viewpoint of Industrial Mobilization Planning	45
By S. W. String, Jr.	
Major McHugh Appointed Civil Defense Advisor	21
Mobilization Guide for Industry	30
Office of Technical Services	51
Our Chapter Membership	20
By Fred M. Jacobs	
Personnel News	38, 41
President King Makes Final Report	12
Secretary's Corner	64
Third Annual Meeting	4
Uniform Procurement Regulations	53
Wallace & Tiernan's War Story	43
Water Determination in Tetrachloroethane	54
By L. Wilson Greene	

INDEX TO ADVERTISERS

Columbia Chemicals Division of		Harshaw Chemical Co.	58
Pittsburgh Plate Glass Co.		Hooker Electrochemical Co.	57
Inside Front Cover		Industrial Rubber Goods Co.	56
Diamond Alkali Co.	31	Marion Contracting Corp.	64
Dow Chemical Co.	Inside Back Cover	Merck Laboratory Chemicals	34
Dryden Rubber Division, Sheller		National Foundry Co.	44
Manufacturing Corp.	47	Niagara Alkali Co.	17
Ernst Bischoff Co.	25	Pemco Corp.	39
Evans Research & Development Co.	57	Pittsburgh Coke & Chemical Co.	40
Ferro Enamel Corp.	63	Professional Directory	50
General Tire & Rubber Co.	Back Cover	Vulcan Copper & Supply Co.	42

CHEMISTRY LIBRARY

"... to sponsor new developments designed to increase the efficiency of chemical warfare means, to collect and disseminate useful knowledge with respect to chemical warfare and related subjects, to foster a spirit of good will and cooperative endeavor among its members and with industry, and to perpetuate the friendships, memories and traditions growing out of their service with the Chemical Corps . . ."

Armed Forces Chemical Association

COL. HARRY A. KUHN, USA, Ret., President
Washington, D. C.

FRED M. JACOBS, Secretary-Treasurer
Room 523, 1129 Vermont Avenue N.W.
Washington 5, D. C.

Publishers of

The Armed Forces Chemical Journal

Published quarterly: January, April, July and October
Subscription, \$2.00 per year

Entered as Second Class matter at Washington, D. C.

LT. COL. HAROLD B. RODIER, CmlC, Ret., Editor
Room 523, 1129 Vermont Avenue N.W.
Washington 5, D. C.

Associate Editor
L. WILSON GREENE

Vol. III

JULY, 1948

No. 1

General Devers' Speech

An exceedingly significant commentary upon chemical warfare and the highest possible compliment to the Chemical Corps were embodied in the address made by General Devers at the annual meeting. General Devers said:

"Our enemies did not refrain from using gas . . . for humane reasons . . . They did not use gas because they were very sure that its use would invite swift and sure retaliation beyond their resources. It's a pity that we, and our Allies, were not so well prepared in other respects, *for if we had been, the war as a whole might well have been averted.*"

Thus General Devers says that the Chemical Corps was so well prepared, technically, industrially and strategically that the enemy did not dare test the issue of *gas warfare* with us. And further, that had America and the Allies been as *generally* prepared for war, the enemy might well have been afraid to test the *general* issue of war with the Allies.

This is not a novel suggestion that the General has made. We in the Corps have said it to one another many times. But it is significant and satisfying to have so eminent a military authority sum up so briefly and pertinently these facts.

The use of poison gas as it was known in World War I was a terrifying and effective medium of war. But the kind of poison gas warfare which might be waged now; bacteriological warfare, atomic gases and other atomic weapons with the new and incredible means of

reaching the enemy with them, make the gas warfare of the first World War seem mild and innocuous.

Our hope of peace for the world and indeed our hope for survival depends squarely today upon the ability of this Nation to keep far ahead of a potential enemy by a thoroughly effective capacity for waging such types of warfare.

Awareness and recognition of such a capacity may indeed avert war and carry the world into a period when an enlightened social conscience will make war unthinkable.

Directors' Meeting Called for August 30

The Directors of the Armed Forces Chemical Association will hold a meeting in Washington, D. C., on Monday, August 30th, at 5 p.m., at the Army and Navy Club.

This meeting is called at this particular time to coincide with the Regional Meeting of the American Chemical Society, inasmuch as a great many of our Directors may be expected to be in Washington at this time for this occasion.

The Directors' Meeting will commence at 5 o'clock with cocktails and will be followed by dinner. An air-conditioned room has been provided at the Army and Navy Club, and although the scheduled part of the meeting will be over before 8 p.m. to give members time to rejoin Chemical Society activities set for that hour, it is anticipated that many of the Directors in attendance may have that evening free and find it agreeable to continue their AFCA session beyond dinner.

This will be the first meeting for the recently-elected Directors-at-Large and it is hoped that this opportunity for them to meet and exchange ideas will contribute materially to the Association's program.

Directors other than Directors-at-Large may be represented at this meeting by proxy in the event of their inability to attend. It is suggested that such Directors, if unable to personally be on hand, ascertain if any of their chapter members expect to be in Washington for the American Chemical Society session, and if so that they delegate their office to them and thereby be represented at this meeting.

All Directors will receive a notice of this meeting in which will be detailed the agenda for the meeting. Colonel Kuhn has expressed a keen desire that this meeting be well attended and hopes that from it will come much benefit to the Association.

From Your National President

The first job of a new C.O. is to take an inventory of the property transferred to his care. We are entering our third year as an Association, during which time we have become an established institution with a direct responsibility in national defense planning as well as perpetuation of the fraternal relationship developed in World War II. We are mutually pledged as members and as chapters to the furtherance and promotion of our objectives and responsibilities for the coming year.

We have a solid foundation of accomplishments in the past on which we can plan to expand with confidence. After moving our headquarters several times in the past two years, we now have centrally located adequate space; we have a minimum but highly efficient secretariat. After considerable loss in membership in the first part of the past year we have shown a steady increase in membership which is continuing.

In furtherance of our objective to perpetuate the memories of World War II the Association has published a history of the Chemical Warfare Service as announced in this issue of the *Journal*. You had a very important part in making that history and now in perpetuating those achievements in permanent form. I am sure you will read your copy with pleasant and proud memories.

In furtherance of our objective of perpetuating the friendships of World War II, it has been decided to publish a *Directory of Members* as of June 30. This *Directory* will be distributed in August and it is planned to make it an annual publication.

The basic objective of this Association, stressing the vital importance of the chemical field to national defense, is recognized in a recent directive of the Munitions Board which recommends to all military departments to maintain liaison with this Association as a source of general information on industry-wide manufacturing capacity. This phase of our activity is assuming expanding importance each day. The scope of activity of our group members, including chemical, rubber, and metal fabrication, gives this Association a broad coverage of industrial contacts. Covering the Armed Forces, we are in a position to collect and disseminate useful information in a unified and centralized manner.

The Vice Presidents outlined the programs of



President Kuhn speaks at dinner meeting

their committees for the coming year. The Membership and Organization Committee, under Elliott Morrill and Deputy Chairman Jacobs, are laying plans with the immediate object of securing an additional thousand members.

The Committee on Meetings and Conventions, under Roy Kulp and Deputy Hep Chamberlain, will concentrate on ways and means of assisting chapter meetings by scheduling speakers, etc. The Committee on War Mobilization Planning, under Sam Cummings, is being organized to handle the requests to and from industry for information, not only on industrial mobilization, but also Civil Defense. The Committee on Research and Development, under Walter Kirner, which was set up last year, is being continued and expanded to the industrial and institutional research and to military chemical research. The Publications Committee, under Al Leggin, with publication of the Chemical Corps History accomplished, is at work on plans for the Association's *Directory* and plans are being formed for additional coverage in the *Journal* and the *Newsletter*, ably assisted by Editor Harold Rodier. The Finance Committee, under Dick Turk, struggling to balance the budget, is cheered by word from Advertising Manager Joe Schwimer that he is on the trail of more advertising. Our esteemed secretary-treasurer, Fred Jacobs, presides over the whole program with the experience in management acquired in his busy life of fifty years of business activity.

HARRY A. KUHN,
Col. USA, Ret.

The Third Annual Meeting

The Early Birds

The third Annual Meeting of the (new) Armed Forces Chemical Association opened at the Army Chemical Center, Edgewood, Maryland, on Thursday, May 20. There were no formal events scheduled for that day, for this phase of the meeting had been set aside for the purely fraternal side of our Association. Meetings of old friends, the renewal of old contacts and social gatherings marked the day, culminating in the party at the Gunpowder Club. Your reporter cannot well estimate how many attended this affair, but if there had been more the club would have been filled to overflowing. The party can be characterized as a grand success, and to many it must surely have been the highlight of the meeting. Members of our Association who gave the Early Birds' Party a miss will be well advised if they include it in their plans for future years. It was, in the opinion of many, the best part of the show.

Special Features

The following day, Friday, May 21, began with a series of tours of the Army Chemical Center. Many faces, conspicuous for evidence of having a high old good time in the small hours of the preceding evening, were conspicuous by their absence from these constructive features of the program. An interesting display in the industrial area was an exhibit consisting of a single end item produced by the Corps (an incendiary bomb), broken down into its component parts, with which were listed the names of the amazing number of manu-



White phosphorus smoke screen at demonstration

Page Four



"Mt. Vernon on the Gunpowder"

facturers who contributed to some phase of the production of this single end item. All branches of the Center held open house on this morning and received innumerable visitors.

The Demonstration

After lunch there was a demonstration of Chemical Warfare materiel in an area adjacent to Gunpowder River. This truly interesting event was attended by more than a thousand persons, including General Devers. A 165-gallon fire bomb, water impact, was among the items shown in the widely varied program which included the presentation of an interesting tactical problem involving the use of many types of chemical weapons. The program ended with the display of a "secret weapon," so secret that it could not even be identified on the program. The *Journal*, therefore, observes a discreet silence upon the subject. We would comment, however, that had any potential enemy observed this "secret weapon" they must surely have exclaimed, "This is the end!"

The Army Chemical Center Band assisted in the entertainment. Weather and wind cooperated beautifully with the program.

Directors' Meeting

Following the demonstration, the directors of the Association went into their session. As our members will recall, the directors consist of the presidents of the various chapters (who may be represented at meetings by a deputy with a proxy), the twenty directors-at-large, and the

Armed Forces Chemical Journal

national officers of the Association. In this representative body is vested the legislative and policy-forming functions and the duty of electing national officers.

This session of the directors was charged with especially important duties, since many amendments to our Constitution and By-Laws had been proposed and were up for consideration. The agenda and preliminary staff work for this meeting had been so well prepared that the session was able to accomplish much in a comparatively brief session.

Possibly the most important change in the Constitution was that which related to the name of the Association. It was unanimously voted to change this to Armed Forces Chemical Association, and all of the phraseology of the Constitution and By-Laws pertinent thereto were appropriately changed to set forth such enlargement in the scope of our mission as the change in name implies.

Another change which was effected made the immediate Past President of the Association a member of the Executive Committee and the Board of Directors. A further change clarified and defined eligibility to membership. Another amendment requires that member chapters hold a minimum of two meetings a year, one of which shall be designated as their annual meeting.

An exceedingly important change in the Constitution sets up a new class of membership known



DR. WALTER E. LAWSON
1st Vice President

as a "sustaining member." The annual dues for such membership were established at \$500.

This issue of the *Journal* has dealt primarily with these changes in our Constitution and By-Laws because the Association is about to publish a directory of members which will include in it the entire Constitution and By-Laws as presently amended. Each member will receive a copy of this publication, probably in the early part of August.

Election of Officers

The directors next held the annual election of national officers and the following slate was unanimously elected: Ludlow King, honorary president; Harry A. Kuhn, president; Dr. Walter E. Lawson, 1st vice president; Richard H. Turk, 2nd vice president (chairman of finance); Elliott Morrill, 3rd vice president (chairman of membership); Alex Leggin, 4th vice president (chairman of publications); Roy Kulp, 5th vice president (chairman of meetings and conventions); Dr. Walter R. Kirner, 6th vice president (chairman of research and development); Samuel N. Cummings, 7th vice president (chairman of war mobilization planning).

Directors-at-Large

Following the election of national officers, announcement was made of the election of the Directors-at-Large for the ensuing year. These



RICHARD H. TURK
(President, Pemco Corp.)
2nd Vice President, Chairman, Finance



ELLIOTT MORRILL
3rd Vice President
Chairman, Membership

Directors are elected by the direct vote of the membership. Mr. Fred Jacobs, acting for the Executive Committee, announced the election of the following Directors-at-Large: Dr. Ira L. Baldwin, Clarence W. Crowell, G. W. Dolan, Dr. Willard H. Dow, L. Wilson Greene, William J. Harshaw, S. Willard Jacobs, Dr. H. F. Johnstone, Dr. D. B. Keyes, Sidney D. Kirkpatrick, Kenneth H. Klipstein, Dr. Philip A. Leighton, R. M. Marshall, Dr. G. E. Miller, R. Lindley Murray, Dr. L. T. Sutherland, Robert A. Weaver, Dr. Harold C. Weber, H. N. Worthley and Philip E. Young.

Elsewhere in this issue this distinguished body of Directors, elected to serve during the ensuing year, is pictured.

Several matters brought up at this session of the Board were discussed briefly and then placed upon the agenda of the Annual Meeting, to be held the following day. Its business completed, the Board adjourned.

Executive Committee Meeting

At the conclusion of the Directors' Meeting the newly-elected national officers, composing the Executive Committee, went into a special session. They elected the following additional officers at

that time, as provided in the Constitution: Fred M. Jacobs, secretary-treasurer; Charles E. Pledger, Jr., general counsel; Harold B. Rodier, editor, the *Journal and News*; Joseph Schwimer, advertising manager.

Thereafter President-Elect Harry A. Kuhn announced the appointment of Mr. George B. Dryden as Special Advisor to the President.

At this session the Executive Committee adopted a policy of appointing deputy chairmen for the various committees under the chairmanship of the vice presidents, each such chairman to designate his own deputy. The function of these deputies is to assist the chairman and to act for them in their absence. While not all of the deputies here named were designated at this time, for clarity they are included in this report. The deputies so far named are: R. Donald Rogers, deputy for finance; Fred M. Jacobs, deputy for membership; Col. Hepburn Chamberlain, deputy for meetings and conventions. Other deputies have not yet been announced.

The first regular meeting of the Executive Committee having been set by President-Elect Kuhn for June 15 the meeting adjourned.

The Mixer

While the hard-working members of this Board were devoting themselves to the business of the Association, the great body of members in attendance were occupying themselves more pleas-



ALEX LEGGIN
4th Vice President
Chairman of Publications



ROY KULP
5th Vice President
Chairman, Meetings and Conventions

urably (if not more profitably) at the mixer, held in the riding hall. Here were great tables set with light refreshments, some edible and some potable—without chlorination. About the tables were hosts of members, officers of the post, their ladies and many guests. Among these were a considerable group of members of the American Chemical Society who had come down from New York for the affair, and a large group of members of the Ordnance Association who had come over from Aberdeen. The atmosphere of the affair was magnificently catalytic, for the group mixed—and reacted. Clearly everyone had a perfectly lovely time and were left in a mood to enjoy and appreciate the dinner.



COL. HEPBURN CHAMBERLAIN
Deputy Chairman, Meetings and Conventions

The Dinner

The setting for the dinner, the atmosphere, the music and the dinner itself deserve, and were accorded, the highest praise. The dinner—and I can certainly speak for the dinner served your reporter—was hot. This made it different and better than most banquets. The Edgewood Chapter and the Army Chemical Center committees charged with the difficult preparations for such an affair deserve great credit for their felicitous and successful arrangements.

But the actual dinner is subordinate in such an affair to the speaking, the introductions, the by-play and all the little incidents that go to make up an "annual dinner." And these "big tent" features were capably and successfully handled and added up to the kind of an evening that everyone had hoped for.

President Pete King, as master of ceremonies, kept things moving at a brisk pace and interest never flagged. Guests and officers were introduced effectively but briefly. The ammunition was saved for the big guns.

Beside President King and President-Elect Kuhn, the principal speakers were Gen. Jacob L. Devers, Chief of the Army Field Forces; Maj. Gen. Alden H. Waitt, Chief, Chemical Corps; Brig. Gen. Morris R. Nelson of the Special Weapons Group, Air Force, and Capt. James F. Byrne, Assistant Director for Procurement, U. S. Navy Ordnance. Their speeches, which were interesting and significant, are reported elsewhere in this issue.

The Dance

After the National Anthem had marked the close of the annual dinner, a space was quickly cleared for dancing. From then 'til the small



R. DONALD ROGERS
Deputy Chairman, Finance



DR. WALTER R. KIRNER
6th Vice President
Chairman, Research and Development

hours of the morning gayety reigned, and as your reporter left the scene, borne down with the weight of years and a long, full day, his last impression was of Wilson Greene and Fred Jacobs tripping the light fantastic while Al Leggin stood by, arms folded, with a benign smile and a far-away look in his eyes.

So to bed. And our annual meeting could not be fully reported without some reference to the bedtime scene. The visiting membership are necessarily housed in dormitory barracks, and as our members, including the brassiest of brass, distinguished scientists and affluent industrialists, all took pot luck in open barracks, they seemed to shed their years and their dignity for the occasion and reverted to boarding school habits and behavior. One hears long and apparently bitter debates as to the expediency of a trip up to the road for hamburgers at 2 a.m., and uncomplimentary remarks upon the stodginess of the few individuals who timidly and plaintively intimate that God made the night for sleep. Not there, He didn't.

Page Eight

The Annual Meeting

The Annual Meeting convened at 9 a.m. on Saturday morning, May 22, President King presiding. The first business to come before the meeting was the rendering of reports by the various committees.

Finance Committee

Mr. R. Donald Rogers, 2nd Vice President and Chairman of Finance, submitted the report for the Committee on Finance. He stated that the fiscal year had started with \$10,527 in the possession of the Association and that it had ended with \$10,227 on hand, a decrease of \$300. He expressed the opinion that this represented a successful fiscal year in view of a number of special expenses incurred during the year, including the acquisition of new furniture for the National Headquarters. Increased activities and functions of the Association had required added personnel at headquarters. Moreover, during the year practically all costs, including printing of the *Journal* and *News*, had increased materially. Mr. Rogers advised that receipts on hand not deposited brought the cash position of the Association to a figure somewhat above \$11,000. Not included in these figures was a special account in



SAMUEL N. CUMMINGS
7th Vice President
Chairman, War Mobilization Planning

Armed Forces Chemical Journal

the
B.
not
of
the
was
of
M
Ass
firm
pres
tory
mat
and
was

In
Ant
Jac
activ
year
reac
that
fyin
Jac
mem
it is
Jac

Fo
of P
publ
Corp
"The
II."
the F
for a
Serv
fore
woul
and
four
techn
dema
Assoc
Chem
book
heart
that
cation
been

July,

the amount of \$5,000, borrowed from Mr. George B. Dryden on an unsecured, non-interest bearing note for the purpose of financing the publication of the History. Most of this amount was due the publisher of the book. He stated that the loan was to be liquidated from the proceeds of the sale of the book.

Mr. Rogers reported that the books of the Association had been audited and approved by a firm of Certified Public Accountants. He expressed the belief that the books were in satisfactory form, adequate to provide all needful information as to the nature and source of our receipts, and full details as to all expenditures. His report was accepted and approved.

Membership Committee

In the absence of Membership Chairman Anthony D'Angelo, Deputy Chairman Fred Jacobs rendered a report on the membership activities of the Association during the preceding year. He reported that the membership had reached its lowest point at the close of 1947, but that since that time it had shown a very satisfying increase. As most of the details of Mr. Jacobs' report are included in an article on membership appearing elsewhere in this issue, it is not covered at length in this resume. Mr. Jacobs' report was accepted and approved.

Publications Committee

Fourth Vice President Alex Leggin, Chairman of Publications, reported for his committee the publication of a popular history of Chemical Corps activities during the late war entitled, "The Chemical Warfare Service in World War II." This book, he stated, had been written by the Historical Section of the Corps to meet a need for an authentic account of the activities of the Service which might become available long before the publication of its official history, which would probably not go to press for some years, and when published would probably consist of four or five volumes and would be so detailed and technical in its nature that it would still leave a demand for a briefer, popular history. The Association, at the request of the Chief of the Chemical Corps, had undertaken to publish this book after it had been read and had received the hearty approval of his committee. He reported that the serious problem of financing its publication out of the Association's limited funds had been met by Mr. George B. Dryden's offer to loan



GEORGE B. DRYDEN
Special Advisor to the President

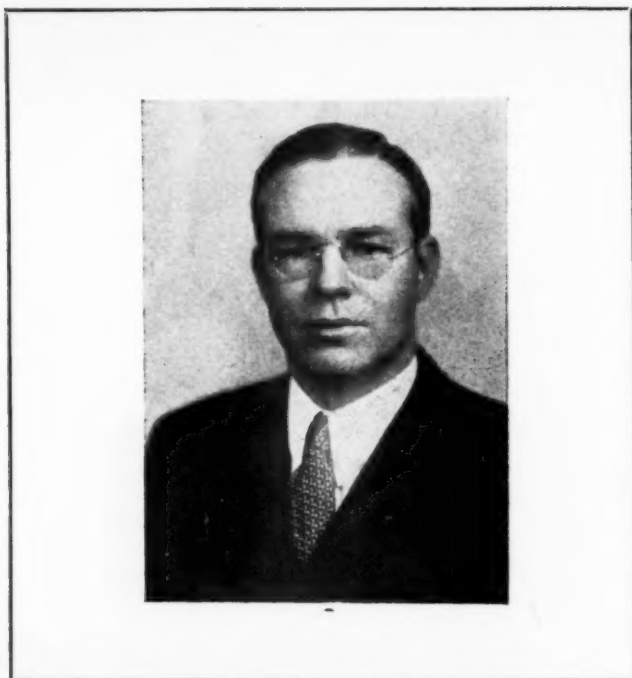
the Association \$5,000 for this purpose, to be repaid from the proceeds of the sale of the book.

Mr. Leggin said that he was happy to report that the book had been published in time for presentation to the Annual Meeting and urged everyone to purchase a copy. He stated that a limited edition, 2,000, had been printed, and suggested the members failing to secure a copy with some promptness might find the edition exhausted. At this point in the report an unidentified member called attention to the fact that numerous war histories had become collectors' items because early editions had sold out, with not enough further demand to justify reprint editions. Mr. Leggin advised that the price of the book had been set at \$4 a copy, enough to secure for the Association a nominal profit provided the entire edition were sold.

The report of the Publications Committee was accepted and approved.

Meetings and Conventions

Fifth Vice President Roy Kulp advised that his committee had no formal report to submit, since their principal activity for the year had been to plan for and put on the annual meetings. On behalf of the National Association and the Army Chemical Center Chapter, he expressed



CHARLES E. PLEDGER, JR.
General Counsel

appreciation for the splendid cooperation given by General Bullene and the various committees headed by Lt. Col. Magness. Mr. Kulp spoke of the great pleasure it had afforded the Army Chemical Center Chapter to be privileged to act as host to the meeting and requested comments and suggestions with a view to any possible improvements in future annual meetings. His report was accepted and approved.

On the subject of meetings, President King raised the point that since our Association now embraced all of the Armed Forces, consideration might be given to the possibility of holding some future annual meeting at a naval or air force installation. He suggested that this might result in enhanced mutual understanding and an influx of membership from the other arms of the service. He stated that he believed such a plan to be practical and asked for further consideration of the idea.

Research and Development

Sixth Vice President Dr. Walter Kirner, Chairman of Research and Development, reported for his committee.

Dr. Kirner stated that the committee had gotten off to a rather slow start last year because of the difficulty of getting in touch with many people during the summer, and secondly, with the chapters as widespread as they are a lot of the neces-

sary correspondence was quite slow. Dr. Kirner said that a Research and Development Committee had been appointed and that things were pretty well in hand in connection with local chapters' committees on R. & D. Dr. Kirner then read the names of the committee members. He stated that they were chosen from various fields—chemical engineering, analytical chemists, explosive problems, organic chemists, and protection problems. Dr. Kirner said that out of 24 chapters, 15 have either chosen a chairman or else a whole committee has been appointed, and he then read off the names of the chairmen in the different chapters. He said that the chapter at Pine Bluff was so small they did not make an appointment and Rochester indicated that they have a rather small one at the present time but they gave the name of an individual in the event the committee wanted to bring to their attention certain problems.

Dr. Kirner stated that the primary problem was to know exactly in what ways they could be of the most assistance to the Research and Engineering Division of the Corps. He suggested that the logical approach would be for the division to request certain things they would like to have done that the committee had the facilities to do. Dr. Kirner proposed to see both Colonel Loucks and Colonel Creasy to discuss the matter with them. He also proposed that the local chapters and also the Research and Development Committee suggest problems they think they might be able to contribute to. One of the members of the committee suggested that a logical starting place would be to look into the matter of high test chloride. He said that it has not been possible to get manufacturers to reduce the moisture to a sufficiently low level so that it was either stable or did not affect containers in which it was stored. Dr. Kirner also stated that the Boston Chapter, under Dr. Weaver, suggested that the local committee could serve as a source of information on special items in techniques which might be useful to the Research and Engineering Division. They might have an individual who developed a special technique which should be called to the attention of Research and Engineering, or they could pass on as a group certain new improvements with which they came in contact in connection with development activities. They also likewise would form a nucleus of trained men who could be called on in emergency, and they would be also familiar with military methods. Dr. Kirner said the committee would be delighted to have any ideas in connection with the members own industry or own job. Dr. Kirner's report was accepted and approved.

War Mobilization Planning

Seventh Vice President Clifford Sayre, Chairman of War Mobilization Planning, then submitted the following report for his committee:

WAR MOBILIZATION PLANNING COMMITTEE REPORT OF 1947-48

The War Mobilization Planning Committee can now report that progress has at last been made in the industrial mobilization planning activities of the Armed Services. As was the case during 1946-47, when no formulated policies were forthcoming, it continued to be the case this past year because the knowledge of the final adoption of fixed policies came too late to permit full committee or Association-at-large participation. The personal contacts of President King and Vice-President Kuhn with the policy-makers in Washington constitute the official contact of the Association.

The meeting of the Board of Directors on September 18, 1947, in New York City was highlighted by an interim report of Vice-President Kuhn on this subject. At that meeting the Army-Navy Munitions Board Plan of 1947, Annex No. 2, was available. Although this plan was subject to some criticism, it did contain the core of a good plan.

Shortly thereafter the advent of the National Security Act (popularly termed "unification") produced a great deal of uncertainty as to the activities of the Army-Navy Munitions Board because the Act established a new agency—the National Security Resources Board. Subsequently, after some months, it was determined that the Munitions Board would continue in being and operate under broad policies recommended by the NSRB and approved by the President.

Such policies of the NSRB and the objectives of the MB on industrial mobilization are now of public record through the very recent publication of Annex No. 47 entitled, "Allocation of Private Industrial Capacity." These matters are covered most fully in the April 1948 issue of the *Chemical Corps Journal* and are recommended for study because copies of the official publication are hard to procure and are apparently not intended for even a limited distribution. Close study of the document and analysis of Armed Service press releases indicate that there is still a hiatus of overlapping functions. These can be studied for constructive revision.

Aside from the outlined policies and objectives, the most important feature of the document is the long-awaited recognition of the Armed Forces Chemical Association and the nine other military-

industrial associations as prime sources of information for industrial mobilization planning.

After a long struggle, President King's objective has been won—it now remains for our Association to exploit the victory.

For the committee,

CLIFFORD L. SAYRE, Chairman

Committee:

Charles A. Buerk

H. Kingsley Ferguson

Gordon B. Kaufmann

A. V. Murray

George W. Perkins

The report was accepted and approved.

The Host Chapter

At this point a resolution was introduced and passed with acclaim giving the warmest praise to the host chapter and to the committee appointed by General Bullene for the successful and hospitable arrangements for caring for the annual meeting.

The New President

President King then introduced the new National President, Col. Harry A. Kuhn, USA Ret., and turned the meeting over to him. Colonel Kuhn received an ovation from the membership.

Col. Harry A. Kuhn then presided and said that he hoped next year he would have as good a report as Mr. King had on progress. He said he would not outline any program because this was not a one-man organization and it depended upon each individual, and because it is small each individual represents a large percentage of the activities. Col. Kuhn stated that he thought all the members were struck, as the Executive Committee was last year, by the fact that they had been operating on a shoestring. Col. Kuhn mentioned that the Association primarily represented the chemical field, which is vital to each branch of national defense, and it is the building stone on which the Navy, Air Force, and Army depends and that there was probably a potential membership of a quarter million, and he urged each member individually to build up the individual membership which would give the local chapters the money with which to operate and, in turn, would build up the national organization. Col. Kuhn also urged that the members try to get advertising for the *Journal*, either directly or indirectly, and said that Mr. Schwimer was going up and down the country seeking advertising. If four

(Continued on page 15)

President King Makes Final Report

This third national meeting of the Chemical Corps Association has proved to be even more magnificent than our anticipations. It surpasses the second national meeting to the same degree that the second improved upon the first. Your vital, direct interest in our Association, which also demonstrates your interest in our country's national defense, is most gratifying to those of us who helped organize and establish the Chemical Corps Association. We are fortunate in having as our guest tonight the man who contributed so much in preparing the foundation for our organization and I am going to ask him to stand and take a bow—Col. Herbert Bear.

As we all predicted, the past year has been a critical period in the life of our Association. Over 50 percent of our original members failed to renew their memberships. We anticipated this serious loss due to our members taking up new walks of life in remote areas where they lost contact completely with members of the Chemical Corps and our Association. Our challenge was to replace the wandering members by new highly-concerned and deeply-interested members. I shall never forget the blue meeting of the Executive Committee last January. Membership and financial charts pointed toward the danger zone and we were frantically conjecturing up all manner of plans to turn the tide. I am delighted to tell you that, as of now, we not only have accomplished our goal but our membership is about 33 percent higher than it was a year ago. We gained 300 new members last month. Also, the bank president still gives us a pleasant nod as our balance is in good standing at approximately \$10,000.

Our increase in membership has been due to the efforts of our chapters and individuals. Here at Edgewood you have a man to whom our Association is indebted for his individual efforts. Mr. Henry Fisher accounted for 50 new members—and in mentioning his name I wish also to pay tribute to the many others who have strengthened our organization in a like manner. I'm sorry Mr. Fisher isn't here tonight so we could all give him a big hand. The one man to whom I give the greatest credit for helping us stem the downward trend and advancing to our present happy position is our Secretary and Treasurer, Mr. Fred Jacobs. Fred, will you please stand and let us express our thanks?

For the past two years your Executive Committee has continually pooled its efforts in preparing the foundation and then the superstructure



President King addresses the Association at the Annual Dinner

of our Association. To these men we owe our unqualified gratitude. I'm sure we would all like to manifest our thanks so I'm going to ask them to take a bow—2nd Vice President Donald Rogers, Chairman of the Finance Committee; 3rd Vice President Anthony D'Angelo, Chairman, Membership and Organization; 4th Vice President Alex Leggin, Chairman of Publications; 5th Vice President Roy Kulp, Chairman, Meetings and Conventions; 6th Vice President Dr. Walter Kirner, Chairman of Research and Development; 7th Vice President Clifford Sayre, Chairman, War Mobilization and Planning; Secretary-Treasurer Fred Jacobs; Harold B. Rodier, Editor of the *Chemical Corps Journal and News*, which have always received highly favorable comments; Joseph Schwimer, Advertising Sales Manager, and last, my close friend and associate, our General Counsel, Charles Pledger.

At our directors' meeting which was held just prior to this dinner, two events took place which I should like to mention. First, the directors voted to change the name of our Association to the Armed Forces Chemical Association. The name signifies our future purposes, and the presence of a naval and an air force officer at the speakers' table indicates the sincerity of our purposes. Second, my successor was elected, and I'm delighted to introduce your new President, Col. Harry Kuhn.

It has been an honor and privilege to serve as your President during the first two years of our Association's existence. I have thoroughly enjoyed my work and the pleasant contacts with my associates and fellow members.

Gen

Ad
Army
the A
wood

GENERAL
MEMBER

Colonel
get me
tonight.
Associat
Army D
the prin
on his p

Further
dent to
have bec
to many
and the
enormou
of our n

In Wo
was an i
introduc
But our
together,
masks an
troops of
at their

Between
Service,
insufficie
lack of i
helped, a
Together
offensive
such an
in World

Our ex
out of r
for huma
out a dec
oners, th
populatio
gard for

They c
sure tha
retaliatio
resources
were not
if we ha
have bee

July, 1948

General Devers Addresses Association

Address by General Jacob L. Devers, Chief, Army Field Forces, Fort Monroe, Virginia, before the Armed Forces Chemical Association, Edgewood Arsenal, Maryland, Friday, May 21, 1948.

GENERAL WAITT, GENERAL BULLENE,
MEMBERS OF ARMED FORCES CHEMICAL ASS'N:

Colonel King did not have to ask me twice to get me to accept his invitation to talk to you tonight. I recall with pleasure speaking to your Association last year, in Chicago, on Industry-Army Day, in which Colonel King was one of the prime movers, and it required no urging on his part to book me again.

Furthermore, it has become increasingly evident to me, in the last year, as it must surely have become more and more apparent to you and to many others, that the Army's Chemical Corps, and the nation's chemical industry, bear an enormous responsibility, today, for a vital phase of our national security.

In World War I, our Chemical Warfare Service was an impromptu organization, born out of the introduction of gas warfare by the Germans. But our chemical industry was not new and, together, they simultaneously developed gas masks and gases which effectively protected our troops on the one hand, and beat the Germans at their own game on the other.

Between Wars I and II, the Chemical Warfare Service, although hampered by inadequate funds, insufficient personnel, and an almost complete lack of interest on the part of the public, was helped, again, by the American chemical industry. Together, they improved and perfected both our offensive and defensive chemical potential—to such an extent that gas was not employed at all in World War II.

Our enemies did not refrain from using gas out of respect for international conventions, or for humane reasons. Their attack upon us without a declaration of war, their treatment of prisoners, the way they waged war upon civilian populations—all these showed a supreme disregard for such considerations.

They did not use gas because they were very sure that its use would invite swift and sure retaliation, on a scale far beyond their own resources. It is a pity that we, and our Allies, were not so well prepared in other respects, for if we had been the war as a whole might well have been averted.



GEN. JACOB L. DEVERS

There is a parallel between this lesson of the last war, certain aspects of the present peace, and the probable course of any future war—a parallel which must not escape us.

In a war in which our enemies, because of the savagery of their assault upon us, forced us to fight back as fiercely, they still hesitated to expose themselves to the risk of chemical retaliation, because they knew that our resources in that respect were superior to their own. But this did not at all deter them from attacking us with all of the remaining means at their command, for they also knew that our national character is such that we can rarely bring ourselves to cast the first stone.

In the same way, our present stockpile of atomic bombs is our best assurance that this period of peace will not end with an attack upon us by atomic bombs. But it is no assurance whatever that we may not be attacked by other means—by orthodox weapons, or by methods as startling in their application to warfare as nuclear fission, but no less destructive to life, if not of property.

Considerations of security prevent me from enlarging upon this subject, but it is no secret

that here again it is the responsibility of the Chemical Corps to develop both preventive, defensive measures against such attack, and retaliatory, offensive capabilities which will once more give any aggressor pause before he employs such a weapon against us.

If we carry this parallel through successive steps, it is not unreasonable to believe that peace may be prolonged indefinitely, if we maintain a proper potential with respect to conventional, as well as unconventional, weapons, and with respect to the men to man them.

Neither wars nor peace have been won in the past by weakness, but we can already see a definite improvement in our prospect of preserving the present peace, as a result of our very evident determination to back up our moral and material force for peace with reasonable all-around military strength.

The United States Army Chemical Corps, as an important part of that strength, can take pride in the peacetime dividends, as well as the wartime advantages, which have grown out of our chemical warfare preparedness. After World War I, the Chemical Warfare Service was at various times requested to eradicate mosquitoes in Florida, rattlesnakes and gophers in the West, hair seals in Alaska, and locusts in the Philippines.

It fought boll weevils, fleas, bedbugs, lice, moths, blackbirds, crows, rats, mice, marine borers, barnacles, and weeds, and helped to solve countless problems involving the chemical sciences. Already, smoke pots and mechanical smoke generators, developed during World War II, promise to provide economical methods of laying heated ground fogs, to protect crops from frost. Decontaminating equipment and airplane tanks are being used to spread insecticides over areas in which orchards and crops are imperiled by insect pests.

Flamethrowers are being used for controlled burning-over of slash areas, for melting hard-packed snow on airfields, and to destroy vegetation, such as water hyacinths, which impedes river navigation. A modified flamethrower, the flame cultivator, is being manufactured as a new tool for the farmer, to kill weeds without harming crops. Some war gases are applicable to fumigation and soil treatment.

In agriculture, with the aid of Chemical Corps and chemical industry research and development, we are quite literally beating our swords into plowshares.

In the medical field, war gas studies offer assistance in treating arsenic, cyanide, lead and mercury poisoning, some eye and nervous disorders, leukemia, syphilis, and one type of cancer.

One toxic agent is now numbered among the most effective rat exterminators, and a vaccine for rinderpest, one of the most deadly and destructive of animal diseases, is now being used for treating diseased cattle in China. In industry, gas masks and protective clothing provide new safety for workers with hazardous materials.

Important as these peacetime contributions of the Chemical Corps are, however, there was one particular military accomplishment of the Corps which no member of the Army Field Forces can ever fail to acknowledge with gratitude. That was the development of the 4.2-inch chemical mortar, and the organization of the battalions which manned it.

Fighting in close support of the infantry, with a weapon of incredible accuracy and unusual versatility, these mortarmen were such prime targets for the enemy's counterbattery fire that the Chemical Corps had a higher ratio of casualties than any other branch of the Army except the Infantry, Cavalry, and Air Corps. The volume of fire they could deliver was so heavy that the Germans thought we had introduced a secret weapon—some sort of "automatic artillery."

The high regard of the Field Forces for the 4.2-inch mortar is amply demonstrated by the fact that, in the new tables of organization for infantry and airborne infantry divisions, a heavy mortar company has been made an organic unit of each regiment. This is not to imply that the Infantry has "taken over" the 4.2 mortar entirely. We have included chemical mortar battalions in the troop basis of the type field army, and in the event of a future war, would expect to employ them as widely, if not more widely, as we did in World War II.

Thus the Chemical Corps, although one of the youngest branches of the Army, already has a great tradition of outstanding service in peace and war. It is ever ready to match, or surpass, any chemical weapon of our enemies, and some which are not solely chemical. With the development of new weapons of mass destruction, the Chemical Corps becomes more important than ever to our national security. I am confident that the Corps will meet this challenge, as it has the challenges of the past.

The American chemical industry, with its scientific genius and its production potential for both peace and war, is no less important to our security. The United States is fortunate indeed that these two, the Chemical Corps and the chemical industry, are so closely integrated, in the Chemical Corps Association, in research and development, and in the Organized Reserve Corps affiliated-units program.

General Waitt Praises Work of A.F.C.A.



Address by Major General Alden H. Waitt at Annual Meeting of the Armed Forces Chemical Association, Army Chemical Center, 21 May 1948.

This is your show tonight. This occasion all belongs to our Armed Forces Chemical Association. Although I am Honorary President of the Association, a position of which I am very proud, I prefer to be with you just as a regular member and not as Chief of the Chemical Corps. You have heard from me so often that I intend to say very little this time.

I should like to tell you of the progress that the Chemical Corps has made during the past year, but the things accomplished in which I take the most satisfaction are highly classified and so there is little that I could tell you about them. I am satisfied that we have made good progress since I last talked to you. We have taken on new and important responsibilities. We are more firmly established as a corps than ever before. Our staffs, although too small for the tremendous responsibilities that they have, are highly competent and distinguished organizations. So far as accomplishments are concerned, let me just say that your Chemical Corps is moving forward with confidence.

I am glad to greet you and I welcome this opportunity of thanking the Armed Forces Chemical Association for its splendid work for national defense during the past year. I congratulate you on the great progress you have made as an organ-

ization. I am grateful for the assistance that you have rendered me and the Chemical Corps.

We are growing as an Association, growing in importance, growing in influence, and growing in accomplishments. Your task is to maintain the forward movement. Here and now I reaffirm my instructions to all my staffs and operating agencies to assist you in every way possible in assisting the Chemical Corps in performing our assigned mission for the Armed Forces.

Third Annual Meeting

(Continued from page 11)

or five more pages of advertising in the *Journal* could be gotten, and quickly, the *Journal* would pay its way and would not be a drain. Col. Kuhn also stressed the importance of company membership, which has two benefits: First, it helps secure additional individual members because each company membership brings in 20 individual members, and second, it gives the industrial audience needed to perform the mission. He also stressed the sustaining membership type and also that he was anxious to see additional chapters formed.

A motion was then made to send a wire to General Porter, who was ill in the hospital. This was seconded and unanimously approved.

Announcement was made that Mr. George B. Dryden was special adviser to the President.

Mr. Schwimer made a few remarks about the people in the field with whom he had worked in the past couple of years who have helped make this Association what it is. He said that his job of trying to get in a chemical company for \$1,000 worth of advertising a year was a difficult one and he needed everyone's help to pave the way.

Col. Kuhn then introduced Colonel Barker, who spoke on Reserve matters.

The Officers' Reserve

COLONEL BARKER: "May I say that the problem of training is complicated by several factors. As Colonel St. John mentioned, the last three years have been turbulent years, with the Army first going downhill so fast that General Marshall said it simply disintegrated. The rebuild has been slow and tedious. We are beginning to see the general plan. We need to get closer cooperation between the local chapters of the Armed Forces Chemical Association and the various Reserve groups throughout the country. You can aid a lot by getting training into the hands of the

(Continued on page 37)

Gen. Nelson Speaks for Air Force at Association Dinner

Exemplifying the reflection in our Association of the unification of the Armed Forces, Brig. Gen. M. R. Nelson, of the Special Weapons Section of the AAF, addressed the dinner session of the third annual meeting, together with General Devers of the Army Field Forces and Captain Byrne of the USN.

The Armed Forces Chemical Association has demonstrated on this date, its third birthday, much evidence in favor of the values of unification. At this third Association meeting, it is noted that basic research, applied research, development, industry, and requirements are represented. The Association has shown that it has kept national preparedness in mind as a primary mission. It is apparent that the Association has been an indispensable adjunct to the Chemical Corps and has furnished invaluable advice and other means of assistance.

It has only been through the coordinated and wholehearted efforts of all those agencies representative of science, industry, and the armed forces that the Chemical Corps' contribution to national defense has been so great. The Air Force acknowledges the contribution which the Corps contributed in World War II toward weapons and materials utilized in the conduct of air warfare. The Air Force appreciates the well-advanced chemical program in which you are engaged, in research and development of new and better means, and the assurance of chemical preparedness. It may be pointed out that a great portion of products of the Chemical Corps were developed for and used in World War II by the Air Force. Planning for the future envisages further requirements being established by the Air Force in your several fields. A greater proportion by the Air Force is contemplated in the research and development phases of your several fields.

The demonstration laid on this afternoon, limited necessarily in the interest of national security, indicated the high degree of effectiveness of a few of your products, particularly the incendiary bomb. The effectiveness of air warfare employing this bomb is well known and a matter of record. The effectiveness of the 4.2 Chemical



BRIG. GEN. MORRIS R. NELSON

Mortar during the last war in ground warfare was so well demonstrated that it was made an organic weapon for Army combat units. Considerable greater possibilities for the future can be expected from your laboratories and from your production lines. The potential for use of your products for the preservation of peace indicates greater possibilities for use in the field of atmospheric attack.

The Air Force will continue to plan and to present requirements involving your products with full confidence that your scientists, industrialists with the Chemical Corps, will produce those chemical munitions and supplies which are so essential in the interest of national defense now and for the future.

On the ball...



Thorough experience... an instinct to pioneer... and resourcefulness in meeting industry's needs for quality-controlled electro-chemicals have "sparked" Niagara's services for nearly half a century, and won enduring customer confidence.

It is this rigid adherence to quality standards... dependability in products and service at all times... that continues to distinguish Niagara Caustic Soda, Caustic Potash, Carbonate of Potash, EBG Liquid Chlorine, Paradichlorobenzene and Niagathal (Tetrachloro Phthalic Anhydride).

May we serve you, too?



NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, N.Y.

LIQUID CHLORINE • CAUSTIC POTASH • CARBONATE OF POTASH • PARADICHLOROBENZENE • CAUSTIC SODA • NIAGATHAL (TETRACHLORO PHTHALIC ANHYDRIDE)

Captain Byrne Comes Aboard

Address by Captain James F. Byrne, U. S. Navy Bureau of Ordnance, before The Armed Forces Chemical Association, Army Chemical Center, Maryland, Friday, May 21, 1948.

GENERAL WAITT, GENERAL BULLENE,
DISTINGUISHED GUESTS, AND
MEMBERS OF ARMED FORCES CHEMICAL ASS'N:

At dinner the other night my young son, a teen-ager, asked me in an explosive sort of way, "What is there to chemical warfare if it doesn't mean poison gas?" And he continued belligerently, "They won't let you use poison gas—so!" A shrug of the shoulders finished chemical warfare, period. It was the complete content of his knowledge. Only a teen-ager could dispose of this subject with such brevity and finality. I am a little outnumbered here tonight but I should like to make a few remarks regarding "the Navy's part in chemical warfare."

Let us examine the means by which a future long-range chemical attack might be made upon us. There are two ways this might occur—over the sea by means of piloted aircraft, or by means of guided missiles—under the sea by means of submarines capable of launching carriers of destructive agents.

There are three points at which such an attack may be stopped. At the point of launching of the carrier—during passage—and after arrival. The Navy is in a position to protect against two of these points. At the point of launching and during passage. Through floating bases it is in a position to attack the launching points—and by means of radar, planes and guided missiles to intercept the carriers during passage.

Naturally we are concerned with the offensive agents of chemical warfare. Munitions may take an incendiary, smoke or toxic form. These may be contained in a shell fired from a gun, a bomb dropped from a plane or in the payload of a guided missile. Amphibious warfare in the Pacific during World War II provides a good example of the use of such munitions. Naval ships were used for shore bombardment prior to and during landing attacks on Jap-held islands. Certain naval craft were armed with the well-known 4.2-inch



CAPT. JAMES F. BYRNE, U.S.N.

chemical mortars. These had not only been provided by the Chemical Corps, but were manned by their personnel. Their effectiveness is a matter of history. And they were a joy to the landing troops.

In the Navy the Office of the Chief of Naval Operations coordinates chemical warfare activities. The Bureau of Ordnance is responsible for offensive measures. The Bureau of Ships, the Bureau of Yards and Docks, and the Bureau of Medicine and Surgery are primarily concerned with defensive measures. For example, the Bureau of Ships is concerned with gas masks, protective clothing, and decontamination methods. The Bureau of Medicine and Surgery is concerned with the medical field, particularly protection against toxic agents—agents of such destruction as to be beyond the power of you and I to currently visualize.

Since the inception of the Chemical Warfare Service during World War I the Navy has worked closely with and through the Chemical Corps. It carries out its programs by taking part in Chemical Corps projects, the end results of which will

have m
sists of

(1)

(2)

(3)

(4)

In c
pect th
and h
Linda.
service
two sh
and th
home.
when s
into a
goes t

For
ence a
sonnel
the in
60 nav
my ow
the h
organ
main,
Force,
contin
odor o
due to

In
Navy
It is c
Corps
Navy.
in bri
nation
tion a
effort

It i
repre
people
of an
ning
the w
ices
initia
attrib
and n

July,

have naval application. This participation consists of:

- (1) Determination of requirements and specifications;
- (2) Assistance in determining the military characteristics;
- (3) Research and development, and
- (4) In financial support.

In connection with this financial support I suspect there have been times when General Waitt and his associates have compared us to little Linda. You know little Linda set out for Sunday services in her best bib and tucker equipped with two shiny nickels—one for the collection plate and the other for an ice cream cone on the way home. She was scarcely on her way to church when she dropped one of her nickels and it rolled into a drain. "Golly," said little Linda, "there goes the Lord's nickel."

For many years a naval unit has been in existence at the Chemical Center here. Naval personnel have attended school courses here since the inception of the unit. Currently there are 60 naval students attending each course. During my own student days here I was impressed with the high quality of the instructors and the organization. These instructors were, in the main, Chemical Corps officers, but included Air Force, Army Medical and Navy lecturers. My continued inability to distinguish between the odor of new mown hay and geraniums was not due to their lack of teaching ability.

In 1946 there was formed the joint Army and Navy Chemical Warfare Coordination Committee. It is composed of representatives of the Chemical Corps, other Army units, the Air Force and the Navy. This committee has done a wonderful job in bringing the services into even closer coordination on chemical warfare matters. Its formation and its success have been largely due to the efforts of Major General Waitt.

It is an inspiration to see here today so many representatives from industry. You are the people who may be our mainstay in the prevention of another war—or the biggest factor in the winning or losing of any future war, by virtue of the weapons you evolve and produce. The services need your cooperation. They need your initiative, ingenuity and skill which are the attributes of American industrial organizations, and make possible the American way of life.

July, 1948

THE CHEMICAL WARFARE SERVICE IN WORLD WAR II

★

A Record of Accomplishment

★

No branch of our military establishment is of more direct interest and concern to chemists and chemical engineers than the Chemical Warfare Service. The invaluable work carried out by this Service on such developments as incendiary bombs, biological warfare, poison gas from both the offensive and defensive points of view, smoke generators, flame throwers and other weapons of modern conflict not only had much to do with winning World War II but is essential to keep us in readiness for possible future emergencies.

This volume is a brief account of the organization and activity of the Chemical Warfare Service in the last war. It was compiled by the Armed Forces Chemical Association in response to a flood of requests from all over the country for information about chemical warfare—what it is, how it is carried on, what problems it involves, and its relation to other branches of the service. This simple, straightforward story will be of value to all chemists, chemical engineers, ordnance experts, and physical chemists; libraries will also find it a popular and useful addition to their shelves. The large number of illustrations of chemical warfare as it is actually waged make the book also of interest to the non-technical reader who wishes to inform himself about this fascinating and highly important aspect of our military operations.

**Published by the
ARMED FORCES CHEMICAL
ASSOCIATION**

Price \$4.00

ARMED FORCES CHEMICAL ASSOCIATION
ROOM 523, 1129 VERMONT AVE. N.W.
WASHINGTON 5, D. C.

Please send me _____ copies of *Chemical Warfare Service*. I enclose \$ _____.

Name _____

Address _____

City & State _____

To Our Chapter Membership

By FRED M. JACOBS
*Secretary-Treasurer; Deputy Chairman,
Membership Committee*

Probably of all the subjects discussed, pro and con, in our publications, none have been given more space than this vital subject of membership.

I have assumed that all chapters have membership committees, and that they are doing their best to get members, both new and renewals, and while we are doing an especially good job at increasing our membership, there is much room for improvement. It is on this basis that I am making the suggestion which gives promise of being a great help to these committees. So I am passing it along. If a thing can be done in one line, instead of two, I try to do it.

Members in good standing, September 1947 to May 31, 1948, increased 44 percent. To those of our members who take pride in our growth, this is a very encouraging statement. And still, if we are to continue to grow, we must live up to our adage that "in numbers there is strength."

Mr. Elliott Morrill of Chicago, who is crammed full of ideas and energy, with a special record of achievement in the Chicago Chapter, has been elected to the third vice-presidency, chairman of membership and organization. He will make frequent visits to the national headquarters, and, in the interim, the writer will act as his deputy.

This will give us an opportunity to crystallize our ideas and be an assurance that our membership will continue to grow.

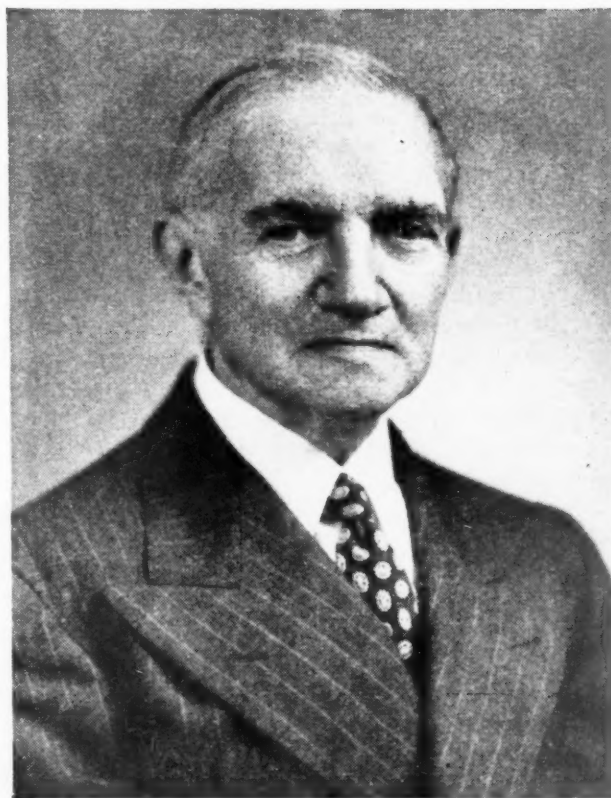
I am trying to say in as few words as possible that we are on the "up," and have come to stay. In this new set-up there is already very evident enthusiasm.

As this letter is being written, a telephone call came in from Jack Barnes, at Houston, Texas. They are completely organized, with the following elected officers: Col. J. A. Barnes, president; C. E. Lyon, 1st vice president; Harvey M. Harker, 2nd vice president; and C. W. Roberts, secretary-treasurer.

We were informed that 44 initial members were enrolled, certainly a very nice start.

We are now approaching the 4,000 mark. Six thousand is our target for the end of the calendar year, and this should be achieved if the membership committees of our chapters will do a good job.

I personally cannot tell you how you can get members. It is a selling job, and no two sales-



FRED M. JACOBS
Secretary-Treasurer
Deputy Chairman, Membership

men, successful though they may be, use the same technique. However, I can give you suggestions which may prove of great value. Here is one: This is a suggestion from T. A. Carilia, Chairman, Lt. Col. MSC, and I am reproducing a memorandum which the medical division, Army Chemical Center, uses, and Lt. Col. Carilia says: "We have obtained excellent results from this memorandum, and I thought it worth passing on to the other chapters, via the *Journal*." We think it is an excellent idea, and we are passing it on. The memorandum reproduced here is self-explanatory:

MEMORANDUM TO: All Members, Army Chemical Center Chapter, Armed Forces Chemical Association

1. May we hereby appoint you honorary member of the Membership Committee?
2. For your convenience, there is attached one (1) application blank for a new membership. If each member obtains one new member, we will have increased our membership by 100 percent.
3. Forward this memorandum with new application, plus remittance, direct to

FOR THE MEMBERSHIP COMMITTEE:

(Sgd) T. A. Carilia, Chairman
Lt. Col. MSC

(Continued on page 39)

Ma
Def

The
appoin
McHug
Civil D
tary of

The C
charged
the dev
establis
of civil
required
civil de

Maj
Defense
the che
of this
histori
civilian
as early
"Defens
of Chem
Chemica
of the
Civilian
Original
men bu
civilians

The C
by Exec
in the r
was org
ical Wa
taining
be a res

Throu
World W
closely
in the
sponsibi
raids re
and it w
tection
gases b

Starti
Branch
Protecti
instituti
country,
Service
defense
exercise

July, 194

Major McHugh Appointed Chemical Defense Advisor for Civil Defense Planning

The Association was advised recently of the appointment April 15, 1948, of Major James E. McHugh as Chemical Defense Advisor, Office of Civil Defense Planning in the Office of the Secretary of Defense.

The Office of Civil Defense Planning has been charged by Secretary of Defense Forrestal with the development of detailed plans for, and the establishment of an integrated national program of civil defense, to be implemented by legislation required in the establishment of a permanent civil defense agency.

Major McHugh, as a member of the Civil Defense Planning Staff, will develop plans for the chemical defense of the civilian population of this country. His appointment recalls the historical interest of the Chemical Corps in civilian protection. This interest was manifested as early as 1936 in the preparation of a pamphlet, "Defense Against Air Attack," by the then Chief of Chemical Warfare Service. In June 1941 the Chemical Warfare Service, with the cooperation of the Ordnance Department, opened the first Civilian Protection School, at Edgewood Arsenal. Originally, this school was for policemen and firemen but was later expanded to include key civilians.

The Office of Civilian Defense was established by Executive Order No. 8757, May 20, 1941, and, in the meantime, the Civilian Protection Branch was organized in the Office of the Chief of Chemical Warfare Service to handle all matters pertaining to the protection of civilians which might be a responsibility of that Service.

Throughout its period of operation during World War II, the Office of Civilian Defense was closely linked with the Chemical Warfare Service in the field of civilian protection. Over-all responsibility for safeguarding civilians during air raids rested with the Office of Civilian Defense, and it was furnished technical assistance for protection measures against incendiaries and war gases by the Chemical Warfare Service.

Starting early in 1942, the Civilian Protection Branch operated six War Department Civilian Protection Schools, established in educational institutions located strategically throughout the country, and staffed with Chemical Warfare Service officers for the training of the civilian defense instructor personnel. In addition, it exercised control over the manufacture and sale



MAJOR JAMES E. McHUGH, CmlC

of gas masks, anti-gas equipment and devices for control of incendiary bombs, safeguarding the public at a time when it was in a mood to buy anything for its own protection.

The Civilian Protection Schools conducted courses which were patterned along the lines of the original Civilian Protection Course at the Chemical Warfare School. In addition to conducting classes, the schools engaged in many extra-curricular civilian defense activities, rendering assistances to the Regional and State Civil Defense Organizations.

Major McHugh, a charter member of the Association, majored in chemical engineering at Ohio State University. Originally commissioned in the Chemical Warfare Reserve from ROTC, he has been on active duty with the Chemical Corps since 1941 and is a graduate of the Industrial College of the Armed Forces. To assist him in developing chemical defense plans, an Advisory Group has been established, composed of Colonel Harry A. Kuhn, USA, Retired, President of the Association; Colonel George J. B. Fisher, USA Retired, and Dr. Arthur D. Ray of the Carbide and Carbon Chemical Company.

A.F.C.A. Directors-at-Large Ele



DR. IRA L. BALDWIN
Dean, Department of Agriculture,
University of Wisconsin



COL. CLARENCE W. CROWELL
Germicide Corp.



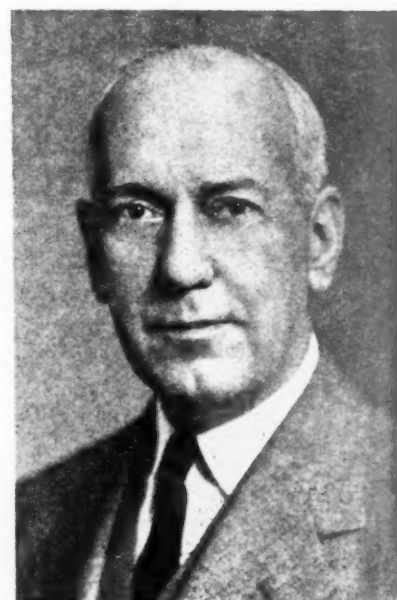
GEORGE W. DOLAN
Chairman of the Board,
Mathieson Chemical Corp.



DR. WILLARD H. DOW
President, Dow Chemical Co.



L. WILSON GREENE
Scientific Director, Technical Command



WILLIAM J. HARSHAW
President, Harshaw Chemical Co.

Elected for Year 1948-49



S. WILLARD JACOBS
Vice President,
Niagara Alkali Co.



DR. H. F. JOHNSTONE
Department of Chemistry,
University of Illinois



DR. DONALD B. KEYES
Director of Research,
Heyden Chemical Co.



KENNETH H. KLIPSTEIN
Calco Division,
American Cyanamid Co.



DR. PHILIP A. LEIGHTON
Stanford University



SIDNEY D. KIRKPATRICK
Editor, Chemical Engineering

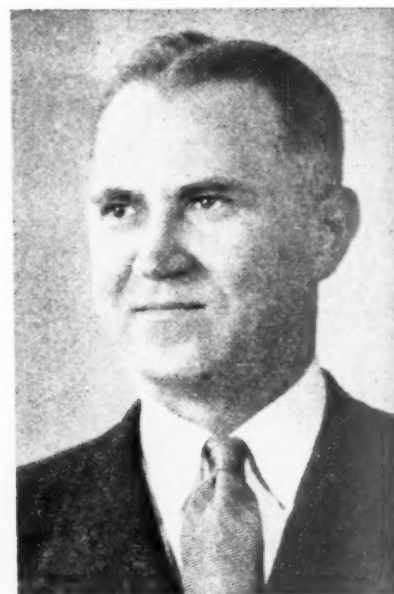
Directors-at-Large



R. M. MARSHALL
President,
Pittsburgh Coke & Chemical Co.



R. LINDLEY MURRAY
Hooker Electrochemical Co.



HANS STAUFFER
Vice President & General Manager,
Stauffer Chemical Co.



ROBERT A. WEAVER
Chairman of the Board,
Ferro Enamel Corp.



DR. HAROLD C. WEBER
Massachusetts Institute of Technology



H. N. WORTHLEY
Research and Development,
Merck & Co.

ER

The
are
invit

New
50 E
New

PRO

July,

Directors-at-Large



PHILIP E. YOUNG
President, Acushnet Process Co.

DIRECTOR-AT-LARGE

NOT PICTURED

DR. LELAND T. SUTHERLAND
American Chemical & Dye Co.

ERNST BISCHOFF COMPANY INC.

- Pharmaceuticals
- Biologicals
- Industrial Plastics
- Textile Chemicals

The services of our research and production departments are available to those who have special problems. We invite your inquiry regarding "hard to get" chemicals.

New York Office:
50 East 42nd Street
New York 17, New York

Plant:
Ivoryton, Conn.

Bischoff

PRODUCTS OF PROVEN MERIT AND INDIVIDUALITY

Association to Hold Open House During Chemical Society Meeting

As at previous meetings of the American Chemical Society, the Army Forces Chemical Association will provide a room during that session for the convenience of our members.

An Association room has been secured at the Statler Hotel in Washington for Monday, August 30th; Tuesday, August 31st, and Wednesday, September 1st. Members of the District of Columbia Chapter will be on hand to act as hosts during this time.

It is expected that many of our members will find this a convenient place to make contacts and that it will prove to be a good spot to locate old friends. On past occasions when such a meeting point has been provided at ACS meetings our members have greatly appreciated having such a focal point provided by the Association.

Members are urged to make use of the room. It may prove to be the surest way of locating old friends.

The Chemical Corps School

By COL. M. E. BARKER, CmlC

Commandant, Chemical Corps School

Historical Highlights

Gas schools were established and conducted at numerous locations in the United States and in France during World War I. During 1920 a chemical school was organized at Lakehurst Proving Ground and one class attended this school, but it was never recognized as an official school. The Chemical Warfare School, as such, was established at Edgewood Arsenal, Maryland, on 20 September 1920, and the first course opened on 10 January 1921. The school was conducted in the barrack area until February 1924, at which time it moved to the present location, about 400 yards south of the Edgewood Railway Station of the Pennsylvania Railroad.

School Classes

The first course conducted at the school was of 12 weeks' duration and was called the Line and Staff Course. This course continued until 1940, during which time 23 courses were conducted. In addition to the Line and Staff Course, a Field Officers' Course of one month's duration was established in 1928 and this course was continued annually until 1939. A Special Naval Chemical Warfare Course was started in June 1922. From the very beginning the Chemical Corps School has been a Joint Service School and since 1922 the Navy has used the Chemical Corps of the Army, thus marking the first real unification of service functions. Other courses for enlisted men and for officers, especially for unit gas officers and unit gas noncommissioned officers, were conducted, as required, for both the Army and the Navy during the period of peace of 1921-40. During these years of peace 2,397 Regular, Reserve, and National Guard officers and enlisted men of the Army (including Army Air Corps) were graduated from the Chemical Warfare School, and 1,567 officers and enlisted men of the Navy were likewise graduated. In addition, a few civilian students were admitted to take the course as well as a few foreign officers. During the war years, which are taken as beginning on 7 September 1940 to include VJ-Day on 25 August 1945, the Chemical Warfare School graduated a total of 30,550 students, of whom 6,485 were successful officer candidates commissioned as Second Lieutenants in the Chemical Warfare Service. Further breaking down this



total number of graduates, it is found that there were 25,249 Army personnel (including Air Force), 4,175 from the Navy, 1,038 civilians, and 88 foreign officers. Since VJ-Day in August 1945, up to and including 11 June 1948, the Chemical Corps School graduated a total of 2,162 persons, of whom 1,444 were Army and Air Force and 713 were from the United States Navy, while 50 were civilians. There were 45 foreign officers graduated.

Thus, as of this date, 11 June 1948, the Chemical Corps School has graduated a total of 36,676 persons during its 27 years' existence.

The daily average student list during the past year has been approximately one hundred and fifty (150) officers and forty (40) enlisted men.

Present Size and Scope of School

At this time the Chemical Corps School is conducting six courses concurrently. There are 12 different courses now authorized. The courses range in length from two weeks to 40 weeks. During the past year 32 separate courses have been conducted at the school. Approximately 30 officer instructors are used as full time teachers in the school. This number does not include the administrative staff and those engaged in other activities.

Of the various courses, the following are of two weeks' length:

- Enlisted Men's Portable Flame Thrower Course
- Reserve Components Officers Radiological Defense Course
- Civilian Components Officers Staff Course

Civilian Components Officers Refresher Course

Navy Indoctrination Course

ORC and NG Indoctrination Course

The Unit Gas Officers Course is of four weeks' duration

The Radiological Defense Officers Course is of six weeks' duration

The Enlisted Cadre Course is of eight weeks' duration

The Officers Basic Course is of 12 weeks' duration

The Chemical Warfare Enlisted Specialist Course is of 12 weeks' duration

The Officers Advanced Course is of 40 weeks' duration

Announcements are made through official channels from time to time as to the quota of students from the Army, the Navy, and the Air Force to each of the various courses conducted by the Chemical Corps School, as well as the dates at which the various courses begin and end. Reserve officers called from inactive duty are eligible for all of the courses conducted at this school except the Enlisted Courses and the Officers Advanced Course. Reserve enlisted men are eligible for the Enlisted Courses. Reserve officers on extended active duty and Regular officers are eligible for the Advanced Course, provided they have completed the Basic Course or have the equivalent credit.

As of the date of preparation of this article, 11 June 1948, the Chemical Corps School is a Joint Service School, having officers and technical civilian employees from the Army, the Navy, and Air Force in attendance and as instructors. The number from the various services varies from time to time, but in general the ratio over a period of time is about three from the Army, two from the Navy, and one from the Air Force, while the enlisted specialists are almost exclusively from the Army.

Change of Name

The Chemical Corps of the Army was formed first as a branch of the National Army on 1 July 1918 by General Orders 62, War Department, dated 28 June 1918, and was given the name "The Chemical Warfare Service." This temporary organization of the National Army became a part of the Regular Army on 1 July 1920 in accordance with the revision of the National Defense Act by Congress on 4 June 1920. At time of organization the Chemical Warfare Service consisted of one brigadier general as Chief of the Service, 100 officers in grades from colonel to

second lieutenant, inclusive, and 1200 enlisted men. By Act of Congress dated 24 February 1945 the Chief of the Chemical Warfare Service was advanced in rank to become a major general. By Act of Congress, designated as Public Law 607 of the 79th Congress, approved by the President on 2 August 1946, the name "The Chemical Warfare Service" was changed to "The Chemical Corps." This Act was implemented by the War Department in General Orders 99, dated 6 September 1946, in which the name "The Chemical Corps" was to be effective from and as of 1 August 1946.

New National Defense Organization

The present organization of the Army is covered by the National Security Act of 1947 which was passed by the 80th Congress and signed by the President on 26 July 1947. This Act makes numerous changes over the many times amended National Defense Act originally approved 3 June 1916. The manner of appointment and promotion of Regular Army officers was radically changed by the Officer Personnel Act of 1947. As practically everyone knows now, there is no longer a War Department or a Navy Department but rather a Department of National Defense presided over by a Secretary of National Defense having cabinet rank. The Army Air Force was converted into a separate organization on a parity with the Army and Navy, and there are now three departments under National Defense, each department having a Secretary, an Under Secretary, and an Assistant Secretary. These are the Departments of the Army, the Navy, and the Air Force.

Mission of Chemical Corps School

The mission and scope of the Chemical Corps School has been increased greatly since the beginning of World War II. Originally the Chemical Corps was charged by law with responsibility for "The investigation, development, manufacture, or procurement and supply to the Army of all smoke and incendiary materials, all toxic gases, and all gas-defense appliances; the research, design, and experimentation connected with chemical warfare and its material; and chemical projectile filling plants and proving grounds; the supervision of the training of the Army in chemical warfare, both offensive and defensive, including the necessary schools of instruction; the organization, equipment, training, and operation of special gas troops, and such other duties as the President may from time to time prescribe."

Therefore, the original mission of the school was to give instruction in those subjects for which the Chief of the Chemical Corps was responsible to the Secretary of War.

During the progress of World War II the Chief of the Chemical Corps was charged with a new job, "To execute all aspects of the biological warfare program." That means that the Chemical Corps School must develop suitable doctrine, manuals, texts, and schools of instruction covering both the offensive and defensive aspects of biological warfare, and that the defensive aspects of this subject must be closely coordinated with the Surgeon General. The whole subject of biological warfare is under detailed study, and, for the time being, information pertaining to this subject is highly classified and is presented only to those persons cleared to receive classified information and *whose assignment and duties necessitate* their receiving such information. Many persons in and out of the service feel that more details about this subject should be available to the Army and the general public, especially in view of the large number of articles on this subject appearing in the popular press. However, it is to be pointed out that the stories appearing in the popular press on the subject of biological warfare are far from being correct either as to facts or interpretation. Therefore, every person having the welfare of national defense at heart can see that further discussion of this subject cannot be gone into at this time.

The problem of radiological defense is of vital importance to both the armed services and to all persons affected by civilian defense and that means everybody in the United States. It is well known that the atomic bomb is an extremely powerful weapon. In many cases the effect of atomic weapons will vary inversely as the efficiency of the damage control organization. In other words, if a military installation or an important city has a good, well-trained and efficient Area Damage Control organization capable of handling disasters of all kinds, including those caused by atomic weapons; by biological attacks; massed incendiary raids; large scale gas attacks; and other special military operations, then it is evident that the effect of any of these attacks, as well as natural catastrophes, will be reduced materially from that which would occur without such an organization being present and functioning. Especially is this true in the case of atomic weapons that might cause radiological contamination of areas around and downwind from the point of functioning of the munition.

The armed services have long realized their obligation to the country in this respect and have

been developing means, methods, and organizations for passive defense against all of these so-called "means of mass destruction." Naturally it has taken time and much expensive experimentation to secure the facts and evaluate those facts so that an effective radiological defense could be devised. While the atomic bomb and other atomic weapons are extremely powerful, it is well to note that "There is always a periphery" to the zone of destruction caused by such weapons and that a suitable organization staffed with trained personnel can reduce the size of this periphery enormously. The Chemical Corps School, functioning for the Chief of the Armed Forces Special Weapons Project, is the Army school for carrying out training in this important subject. Currently two courses in radiological defense are being conducted, one of six weeks' duration for officers and civilian technical experts, and a second one of two weeks' duration for selected Reserve officers drawn from the three Departments of National Defense. Later it is expected that the training will be extended to larger categories of officers, enlisted men, and civilians at the Chemical Corps School. Two other schools will be operated in connection with these subjects—one by the Air Force and one by the Navy. Later training at home stations for Reserve units, Reserve officers, and civilian defense organizations will be conducted by instructors who are trained in the subject at the Chemical Corps School.

Therefore, it is perfectly evident to anyone who studies the subject even casually that the scope and functions of the Chemical Corps School are now far and away beyond the subject matter covered at this school before and during World War II.

Personnel Requirements of Chemical Corps

The Chemical Corps has three major types of tasks to perform and therefore requires three major categories of personnel as follows:

- a. Troops and Staff.
- b. Technical, Manufacturing, and Inspection.
- c. Supply and Procurement.

Training for officers in the Regular Army and Reserve officers is therefore built on the theory that officers of the Regular Army and Reserve officers on extended active duty will be trained as experts in one of the fields of Chemical Corps activity and will be given a good grounding in the functions of the other two fields so that they may coordinate their own work with that of the rest of the team and can serve as administrators where all three types of functions have to be considered. Training for officers of the Reserve Corps on inactive duty is planned on the basis

that they will get detailed training in one particular field and only so much additional training as will enable them to understand the correlation of their particular field with other fields of action in the service. For instance, if a Reserve colonel is a specialist in chemical engineering research in civil life, it is planned that his major effort in training, and his assignment, will be along technical lines. He will receive additional training to enable him to understand thoroughly how material is to be used in the field; how it will be procured, stored, and issued, so that he will be able to work effectively as a member of the team. All too frequently in the past, especially during World War II, officers of the Chemical Corps were specialists in their particular field but had no conception of the problems of the soldier in the field; or the problems of procurement, storage, distribution, and issue of supplies; or the conditions of handling and storing supplies before they were used by soldiers in battle. To obviate this lack of teamwork, this school has set up two plans for training Reserve officers as follows:

a. *The Gerow; or Department of the Army Plan.* This plan visualizes that all young Reserve officers will take the 12 weeks' Basic Course and after completing this course and six or eight years inactive service they will then take the 12 weeks' Advanced Associate Course, after which they will become eligible for the Associate Courses at the Command and General Staff School which will complete their general military training if they belong to the Troop and Staff group. After completing the Advanced Associate Course the Supply and Procurement group would then take the Associate Course of 12 weeks' duration, or a series of shorter courses at the Armed Forces Industrial College; whereas officers belonging to the Technical, Manufacturing, and Inspection group would complete the Advanced Associate Course and then receive on-the-job training in their specialties.

b. *The Chemical Corps School Plan* is designed to supplement the Department of the Army plan where individual Reserve officers cannot avail themselves of 12 weeks' instruction on active duty at one time because of their civilian employment. It is realized fully at this school that many excellent Reserve officers have to make a living and that their job or profession is of such a nature that they cannot get away from their job for prolonged periods of time. Therefore it is proposed that all Reserve officers unable to follow the Gerow Plan, regardless of civilian training or future assignment, will attend three 2-week courses set up as follows:

First, the *Civilian Components Officers Re-*

resher Course. This 2-week course is designed to give basic training to Reserve officers of the Chemical Corps in matters pertaining to materiel and technique and is intended to be equally applicable to individuals who may command troops or who will carry out manufacturing, inspection, or research, or who will have to deal with supply and procurement.

The second course in the series is the *Civilian Components Officers Staff Course.* This is intended to teach staff functioning at all levels, which will include detailed instruction on organization, troops, arsenals, and the functioning of the various sections in the Office, Chief, as well as the Department of the Army and the Department of National Defense. This, likewise, is a course for all officers.

The third course in this series has not been conducted yet but it is intended that this course will be called the *Civilian Components Officers Combined Arms Course* and will be intended to teach officers of all ranks and all assignments something about combined arms tactics and technique in the field so that they will understand where their work fits in with that of all other arms and departments. These three courses are planned to be taken in the order stated but not necessarily in successive years. It will be possible for an individual to take two of these courses during one year; or he may take them over a period of several years at his convenience.

In addition to the above described training for officers of all three groups and for all future assignments, it is planned to conduct a series of 2-week courses for officers to qualify them for special assignments. These special courses will cover inspection; procurement; storage and supply; troop management; chemical staff operation; biological warfare; and radiological defense. The first one of these technical courses actually to be conducted at the school was the course in radiological defense, of which three classes will be conducted during the months of June, July, and August 1948. Other specialist courses will be developed and conducted as rapidly as facilities permit.

Summary

The training of all officers—Reserve, National Guard, and Regular—is a matter of primary importance to the Chief of the Chemical Corps, and the Chemical Corps School is the one organization under his control where such instruction can be carried out on an efficient basis. The staff and faculty of the school now consists of officers, warrant officers, enlisted persons, and

(Continued on page 57)

Mobilization Guide for Industry

Published by Munitions Board

The Munitions Board recently published its Guide for Joint Industry-Military Procurement Planning, to advise industries how they can prepare their plants for industrial mobilization in the event of national emergency.

"An alert nation, militarily and industrially prepared against a national emergency, has an excellent chance of avoiding such an emergency," Mr. Thomas J. Hargrave, Chairman of the Munitions Board, said. "Preparedness is a foundation of peace.

"If American industries give attention to their probable wartime conversion problems now, in peacetime, their mobilization in event of a national emergency will be greatly reduced, sources of confusion will be removed, and the military procurement job will be more efficient in support of our Armed Services."

The guide is part of the Board's program to keep industry informed on military industrial preparedness activities. It is the result of over six months' work by Munitions Board industrial mobilization and procurement experts, and study and comment by two hundred labor, management and industrial executives throughout the nation. It was designed in conjunction with the Munitions Board's responsibility for planning the military aspects of industrial mobilization.

Divided into six sections, the guide tells industrial management how it can implement government mobilization plans by making a complete study of a plant's actual mobilization problems during World War II, and of probable conversion and production problems which will confront the management in a future mobilization.

The first section discusses the meaning of industrial mobilization, outlines what mobilization requires from industry, and provides assistance for management in determining as far as possible what products the particular company will be called upon to make in event of an emergency. It tells how a company can make its own mobilization plan which will conform with government plans, and contains a summary of what the United States Government is doing about industrial mobilization and what type government controls are being planned for any future emergency,

along with an explanation why industry should make its own plans.

The second section is a check list to assist in private industrial mobilization planning, including planning by top management and a number of other studies which should be made in relation to materials and supplies; sales and shipping; personnel, labor resources, training and industrial relations; production and production control; plant layouts, equipment, maintenance and expansion; research and development, and plant security and damage control.

A third section deals with military plans for supply sources, while the fourth section provides lists of materials essential in war, including lists of items which were in short supply during World War II.

The fifth section of the Guide for Joint Industry-Military Procurement Planning is a list of the military offices across the nation which are engaged in procurement planning for the Armed Services. This section constitutes a listing of the points which industry may contact for assistance in its planning and in determining how it can help equip our fighting men in defense of our country in time of war.

The sixth and final section of the guide contains a list of the military procurement offices which are engaged in current procurement activities for the National Military Establishment, and a list of the items they purchase.

The foreword of the guide is a message from the Chairman of the Munitions Board to American industry. In that message, Mr. Hargrave states: "With national military preparedness backed by national industrial preparedness, our nation need fear no aggressor. The responsibility for maintaining military strength has been entrusted to the government, and provision is steadily being increased to support it. The initiative for maintaining industrial strength rests with you."

DIAMOND

Quality Chemicals

**USED SUCCESSFULLY
IN EVERY INDUSTRY**

58% Light Soda Ash
58% Dense Soda Ash
Bicarbonate of Soda U.S.P.
Powdered, Granular
Bicarbonate of Soda
Free-Flowing
Caustic Soda
Solid, Ground, Flake
Liquid Caustic Soda
50% NaOH
73% NaOH
Liquid Chlorine
Single Unit Tank Cars
Multi-Unit Tank Cars
Cylinders
Muriatic Acid
Tank Cars
Carbon Tetrachloride
Tank Cars and Drums
Chlorowax 70
(Resinous Chlorinated
Paraffin)
Chlorowax 40
(Liquid Chlorinated
Paraffin)
Dry Cleaning Solvents
Laundry Soda
Cleaner and Cleanser

Diamond Soda Crystals
Sesquicarbonate of Soda
Special Alkalies
All Strengths
Ground, Flake
High Test Alkali
Diamond Detergent
Hydrolate
Hydrobreak
Paralate

COKE AND BY-PRODUCT DEPARTMENT

Coal
Coke
Domestic, Foundry
Benzol
Pure, Nitration
Chemical Limestone
Toluol
Pure, Nitration
Ammonia
Tar, Crude
Gas, Coke Oven
Crude Heavy Solvent
Motor Fuel
Xylol

STANDARD SILICATE DIVISION

Silicate of Soda, Liquid
All Grades
Water White 42°
Silicate of Soda, Glass
Silicate of Soda,
Concrete Special
Sodium Metasilicate
Sodium Orthosilicate
Sodium Supersilicate
Alkalate
Metalate
Ortholate

STANDARD CHROMATE DIVISION Painesville, Ohio

Bichromate of Soda
Crystal, Granular,
Anhydrous, Liquid
Chromate of Soda
Anhydrous, Liquid
Ammonium Bichromate
Bichromate of Potash
Crystal, Granular
Potassium Chromate
Potassium Sodium
Chromate
Chrome Salt Cake
Tanning Salts

PURE CALCIUM PRODUCTS DIVISION Painesville, Ohio

Precipitated Calcium Car-
bonate Pigments for Paint,
Rubber, Glass and Printing
Ink.

Swansdown	Surfex
Suspenso	Multifex
Millical	Kalite
Non-Fer-Al	Kalvan



DIAMOND ALKALI COMPANY

CLEVELAND 14, OHIO, and Everywhere



"The Chemical Warfare Service"

A RECORD OF COMBAT AND SUPPLY

YOUR STORY

Written for YOU

★ ★

Published by the

YOUR ASSOCIATION

Price \$4.00

222 pages illustrated

What is Chemical Warfare? How is it carried on? What problems does it involve? How was it used during the past war? These are some of the innumerable questions asked about the Service. In response to these requests for information the Armed Forces Chemical Association has put together the story of the organization and activities of the Service.

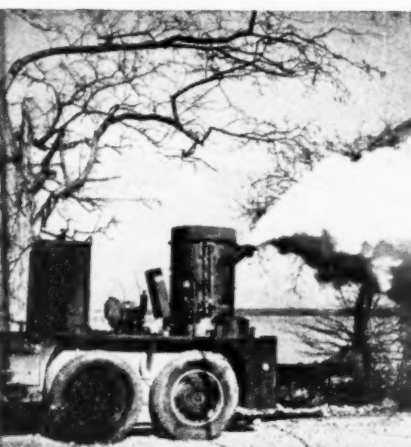
★

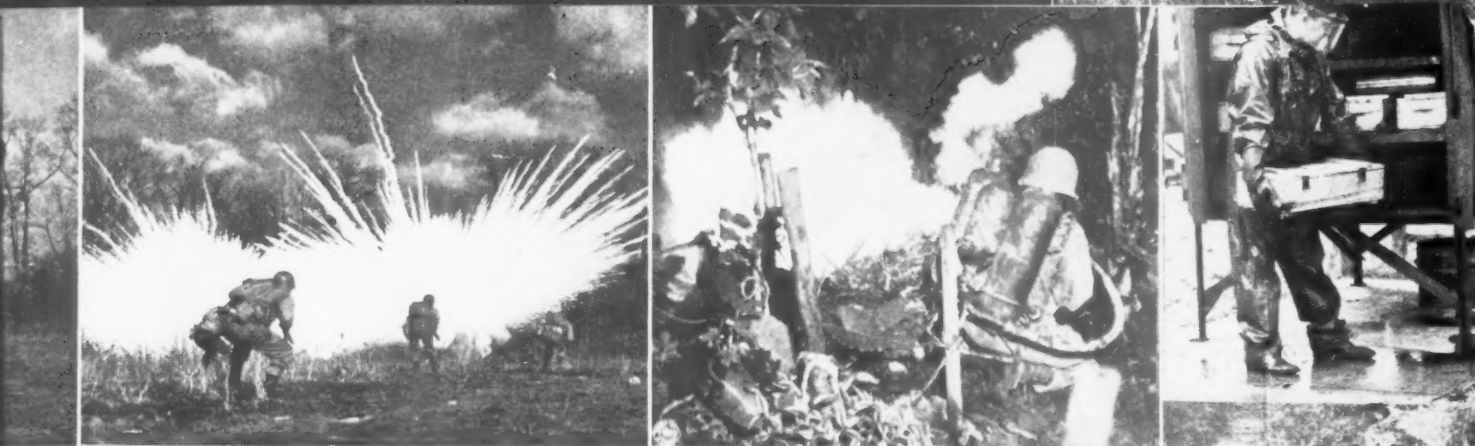
The volume contains information on the wartime records and achievements of the Combat and Supply units of the Service; the organization and the achievements and problems of research, development, procurement, and supply for incendiary bombs, biological warfare, ammunition, smoke, toxic gases, and flame throwers. The large number of illustrations of Chemical Warfare as it was actually waged make the book of interest to the nontechnical reader who wishes to inform himself of this fascinating and highly important aspect of our military operations. Included also is a list of all "E" award winners who manufactured materials for the Chemical Warfare Service.

★

Every member of the Service, officer or enlisted man, chemist, engineer, and manufacturer, will be interested in this simple, straightforward story of the Chemical Warfare Service.

Make Sure You Get YOUR Copy by Mailing in





Service in World War II"

ACCOMPLISHMENT

STORY

for You

*

ed by

OCIATION

\$4.00

illustrated

g in Your Order TODAY ➡



June 28, 1948

I have read with interest and much satisfaction "The Chemical Warfare Service in World War II—A Report of Accomplishment." This volume contains an excellent summation of our chemical warfare mission and the manner of its accomplishment in the recent war.

While it does not purport to be a definitive history, all phases of chemical warfare activities are covered, much valuable summary data is provided and the selected treatment of the performance of our personnel, organization, units, munitions and weapons is well presented.

This interesting work should serve well as a popular history of the Chemical Warfare Service in World War II and as a valuable reference volume for Chemical Corps personnel.

ALDEN H. WAITT,
Brig. General, CmlC

*

"The Armed Forces Chemical Association (formerly The Chemical Corps Association) has performed a notable service in making available so soon an entertaining and instructive account of the relatively unknown but outstanding accomplishments of CWS during World War II. The record is one that every chemist and chemical engineer can be proud of. Every red-blooded American will derive pleasure and satisfaction from its informative pages."

WALTER J. MURPHY,
Editor, Industrial & Engineering Chemistry



ARMED FORCES CHEMICAL ASSOCIATION
ROOM 523, 1129 VERMONT AVE. N.W.
WASHINGTON 5, D. C.

Please send me.....copies of *Chemical Warfare Service*.

I enclose \$.....

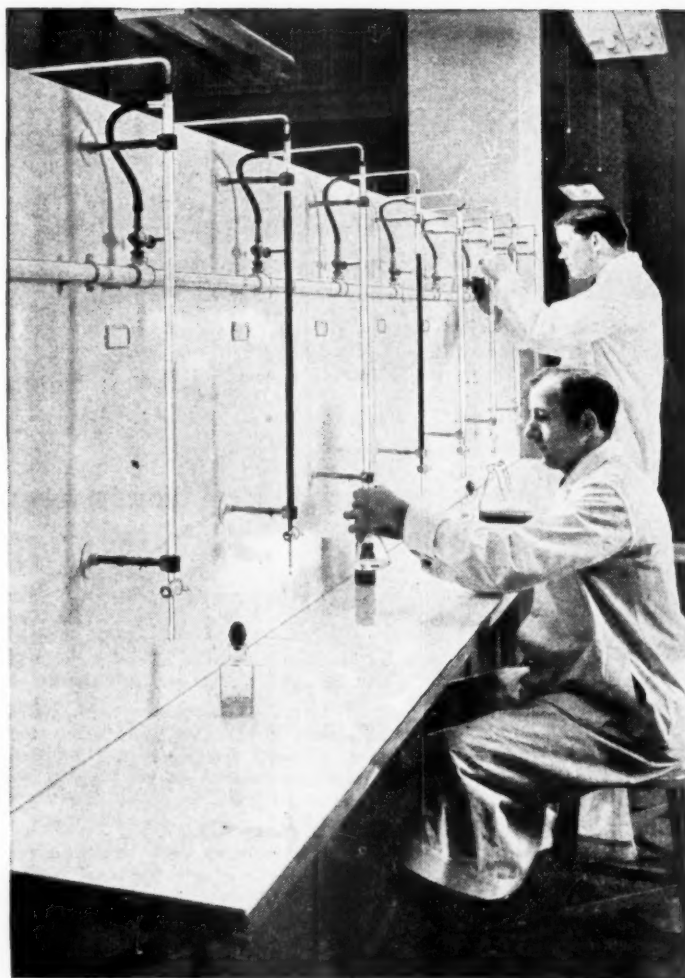
Name.....

Address.....

City & State.....

Sixty Graduate Chemists test every batch

In the Analytical Laboratories where Merck Chemicals undergo the most rigid quality control.



We believe that no control laboratory is more modern in equipment than the Merck Analytical Laboratories. Because of continuous refinement of testing methods and the adoption of new, original features, Merck control chemists work always with unquestioned accuracy.

Purity and identity of Merck Laboratory Chemicals are established, in many cases, by the same highly refined analytical procedures used in the most advanced organic research.

Perhaps that is why more and more chemists are specifying Merck Laboratory Chemicals.

MERCK LABORATORY CHEMICALS

MERCK & CO., Inc. *Manufacturing Chemists* RAHWAY, N. J.

New York, N. Y. • Philadelphia, Pa. • St. Louis, Mo. • Chicago, Ill. • Elkton, Va.

Los Angeles, Calif. • In Canada: MERCK & CO., Ltd. Montreal • Toronto • Valleyfield



The C.C.M.A.

(Reprinted by permission from the Journal of the Armed Forces Communications Association)

What is the Coordinating Committee of Military Associations? Is it a secret organization? What is it doing? Why haven't we heard about it before?

Such was the barrage of questions tossed at the Coordinating Committee's chairman, Ludlow King, when he appeared as a guest at the AFCA's council meeting at the Dayton convention.

King, a former Chemical Corps colonel, president of the Chemical Corps Association, and now with the Owens Corning Fiberglass Corp., had been invited by the AFCA Executive Secretary, Gen. S. H. Sherrill, to appear before the council and present a brief outline of the CCMA. The reaction to his presentation was immediate and startling. The AFCA's board, headed by Gen. David Sarnoff, President of RCA, quickly expressed avid interest in the CCMA's activities and Col. King was queried at considerable length on the committee.

One result of the querying was a motion by Gen. Sarnoff that a committee be appointed to study the CCMA and deliver a report on the group at the next meeting of the board. The motion was adopted, and the committee was appointed. Another suggestion was that the next issue of *Signals* carry a short statement on the CCMA. It is in agreement with that suggestion that a brief account of the coordinating committee follows.

About two years ago officers and other personnel of military-industry associations, with headquarters in Washington, began to sit down together monthly to exchange ideas on their organizations, and to work out cooperation on projects of mutual interest. Experiences acquired by one association were passed on to the others. Each of the associations had a journal, and publishing problems of production, circulation, and costs were discussed.

While agreement was sought on projects there was no attempt at organization to the extent of majority rule. Each association remained a separate entity taking part in a project or abstaining at will. A title was chosen, from several suggested, and the group became the Coordinating Committee of Military Associations. That gave an impressive sound of organization, but actually

LUDLOW KING REELECTED CHAIRMAN

The Journal is pleased to announce that Honorary President Ludlow King has just been reelected as Chairman of the Coordinating Committee of the Armed Forces Associations, under which name the CCMA now operates.

the group was entirely informal with no semblance of rules or by-laws.

Top level military department leaders began to be invited to the meetings, which from the first until now have taken place as luncheons at the Army-Navy Club in Washington. Secretary of Defense Forrestal, Secretary of the Army Royall, Secretary of the Air Force Symington, Secretary of the Navy Sullivan, and Munitions Board Chairman Hargrave were guests at the luncheon meetings—several times in the case of some. These guests were given an account of activities of the association, and in return reported on developments in their various departments, so that the meetings began to develop into a dissemination point for information the military departments and the associations wanted to pass on to each other.

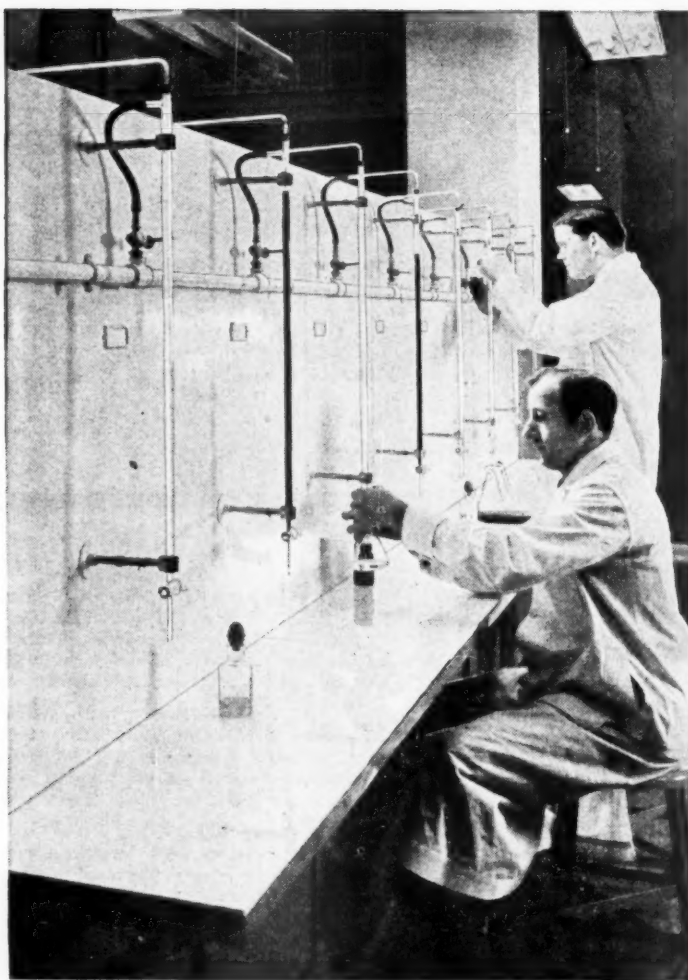
The idea of industry and the Army getting together on a common meeting ground was conceived in CCMA meetings. From this was born the National Industry-Army Day, the CCMA setting the stage for the first which took place in Chicago. That meeting was such a smashing success that the committee was requested by the military and industrial leaders to make it an annual event. It was in compliance with that request that the second meeting was staged, that which took place in Dallas this year.

Regional committees, similar to the CCMA, sponsored other Industry-Army meetings. Smaller in scale, but equally successful meetings, took place at Ft. Lewis, Wash., and at Omaha, Nebr.

With the unification of this country's armed services, and the resultant emphasis on coordination particularly in research, development and procurement, the military department heads discovered that in the CCMA they had exactly the sort of a coalition they wanted. In fact, Mr. Hargrave revealed that extensive planning and investigation in his department had filled a ream of paper with details of what should be had in the way of a cooperative industry-military group,

Sixty Graduate Chemists test every batch

In the Analytical Laboratories where Merck Chemicals undergo the most rigid quality control.



We believe that no control laboratory is more modern in equipment than the Merck Analytical Laboratories. Because of continuous refinement of testing methods and the adoption of new, original features, Merck control chemists work always with unquestioned accuracy.

Purity and identity of Merck Laboratory Chemicals are established, in many cases, by the same highly refined analytical procedures used in the most advanced organic research.

Perhaps that is why more and more chemists are specifying Merck Laboratory Chemicals.

MERCK LABORATORY CHEMICALS

MERCK & CO., Inc. *Manufacturing Chemists* RAHWAY, N. J.

New York, N. Y. • Philadelphia, Pa. • St. Louis, Mo. • Chicago, Ill. • Elkton, Va.

Los Angeles, Calif. • In Canada: MERCK & CO., Ltd. Montreal • Toronto • Valleyfield



The C.C.M.A.

(Reprinted by permission from the Journal of the Armed Forces Communications Association)

What is the Coordinating Committee of Military Associations? Is it a secret organization? What is it doing? Why haven't we heard about it before?

Such was the barrage of questions tossed at the Coordinating Committee's chairman, Ludlow King, when he appeared as a guest at the AFCA's council meeting at the Dayton convention.

King, a former Chemical Corps colonel, president of the Chemical Corps Association, and now with the Owens Corning Fiberglass Corp., had been invited by the AFCA Executive Secretary, Gen. S. H. Sherrill, to appear before the council and present a brief outline of the CCMA. The reaction to his presentation was immediate and startling. The AFCA's board, headed by Gen. David Sarnoff, President of RCA, quickly expressed avid interest in the CCMA's activities and Col. King was queried at considerable length on the committee.

One result of the querying was a motion by Gen. Sarnoff that a committee be appointed to study the CCMA and deliver a report on the group at the next meeting of the board. The motion was adopted, and the committee was appointed. Another suggestion was that the next issue of *Signals* carry a short statement on the CCMA. It is in agreement with that suggestion that a brief account of the coordinating committee follows.

About two years ago officers and other personnel of military-industry associations, with headquarters in Washington, began to sit down together monthly to exchange ideas on their organizations, and to work out cooperation on projects of mutual interest. Experiences acquired by one association were passed on to the others. Each of the associations had a journal, and publishing problems of production, circulation, and costs were discussed.

While agreement was sought on projects there was no attempt at organization to the extent of majority rule. Each association remained a separate entity taking part in a project or abstaining at will. A title was chosen, from several suggested, and the group became the Coordinating Committee of Military Associations. That gave an impressive sound of organization, but actually

LUDLOW KING REELECTED CHAIRMAN

The Journal is pleased to announce that Honorary President Ludlow King has just been reelected as Chairman of the Coordinating Committee of the Armed Forces Associations, under which name the CCMA now operates.

the group was entirely informal with no semblance of rules or by-laws.

Top level military department leaders began to be invited to the meetings, which from the first until now have taken place as luncheons at the Army-Navy Club in Washington. Secretary of Defense Forrestal, Secretary of the Army Royall, Secretary of the Air Force Symington, Secretary of the Navy Sullivan, and Munitions Board Chairman Hargrave were guests at the luncheon meetings—several times in the case of some. These guests were given an account of activities of the association, and in return reported on developments in their various departments, so that the meetings began to develop into a dissemination point for information the military departments and the associations wanted to pass on to each other.

The idea of industry and the Army getting together on a common meeting ground was conceived in CCMA meetings. From this was born the National Industry-Army Day, the CCMA setting the stage for the first which took place in Chicago. That meeting was such a smashing success that the committee was requested by the military and industrial leaders to make it an annual event. It was in compliance with that request that the second meeting was staged, that which took place in Dallas this year.

Regional committees, similar to the CCMA, sponsored other Industry-Army meetings. Smaller in scale, but equally successful meetings, took place at Ft. Lewis, Wash., and at Omaha, Nebr.

With the unification of this country's armed services, and the resultant emphasis on coordination particularly in research, development and procurement, the military department heads discovered that in the CCMA they had exactly the sort of a coalition they wanted. In fact, Mr. Hargrave revealed that extensive planning and investigation in his department had filled a ream of paper with details of what should be had in the way of a cooperative industry-military group,

and then found that they had just what was wanted in the CCMA. Secretary Forrestal also ordered a study made of the associations.

The Munitions Board is especially interested in the CCMA. Recently Mr. Hargrave requested of the CCMA that it supply him with a list of the group members of each of the associations. He desired, he said, to know which of the industrial firms were interested enough in preparedness to join the military-industry association.

In a brochure issued by the Munitions Board, "Allocation of Private Industrial Capacity for Procurement Planning of the Armed Services," the military departments were "encouraged to maintain liaison with the Armed Forces industrial associations as sources of general information relating to industry-wide manufacturing capacity." The names and addresses of the associations were listed.

The associations, and those of its officers who make up the CCMA, are listed here for general information:

Infantry Assn., Col. Joseph T. Green; Chemical Corps Assn., Col. Ludlow King; Assn. of Military-Surgeons, Col. James M. Phalen; Armed Forces Communications Assn., Brig. Gen. S. H. Sherrill; The Quartermaster Assn., Col. Walter A. Pashley; Field Artillery Assn., Col. Breckinridge A. Day; Army Transportation, Col. Charles F. Payton; Society of Military Engineers, Col. F. H. Kohloss; American Ordnance Assn., Col. Leo A. Codd; Navy Industrial Assn., Comdr. Willard Jenson; Armored Cavalry Assn., Col. E. M. Sumner; Coast Artillery Assn., Col. William I. Brady; Air Force Assn., Col. George Van Nostrand.

Since unification of the armed services, industry has been anxiously awaiting the establishment of unified procurement regulations. The Munitions Board has been equally desirous of combining the various services' needs into single contracts and has been attempting such coordination. Yet, despite this desire on the part of both supplier and procurer, the way to fulfillment has not been simple.

While it was obvious early in the planning for unified procurement procedures that a combination of representatives of the various industries and of the varied branches of the services was needed, no obvious way of organizing such a combination presented itself. It is understandable then why industry and the military are so keenly interested in an already existing military-industry coalition such as the CCMA.

Space limitation in this issue has not permitted a thorough account of the CCMA's activities, but

there will be more in future issues, and a regular report will be made on the CCMA's meetings. Co

Watch for these reports. Perhaps because the importance of the CCMA was not apparent in the beginning, earlier accounts of its activities were missed. But it is pointed out here that an announcement of the CCMA's formation was made in the AFCA's Bulletin of Sept. 20, 1946, and frequent reports appeared in later issues. The group has also been mentioned in *Signals*.

CHEMICAL CORPS TECHNICAL COMMAND

The Chemical Corps Technical Command is an activity of the Army Chemical Center.

The mission of the Command is the discovery and development of new agents, materiel and methods for offensive and defensive purposes and the improvement of existing chemical warfare materiel. In the accomplishment of this mission its functions include fundamental or basic research on toxic chemical agents, incendiaries, screening and signalling smokes and munitions and weapons for dispersing these materials, as well as the development of equipment and clothing for protection against enemy use of chemical warfare agents. The Command, in cooperation with the Quartermaster Corps, also develops the Army insecticides, miticides, rodenticides and fungicides, and devises methods and equipment for their use. In order to accomplish this mission the Command is organized into seven divisions, which are Chemical, Engineering, Munitions, Plants, Protective, Technical Services, and Test. Maj. Gen. C. H. Chang, Chief of the Command, is also Chief of the Army Chemical Center.

Nearby this building, which contains the main laboratories and offices, are shops, special laboratories, pilot plants, and other structures necessary for the efficient functioning of the Command. Ranges for conducting small scale field tests of chemical agents and munitions are located at a relatively short distance from the technical area. Col. J. H. Ranges, Chief of the Ranges, is also Chief of the Engineering Division.

In addition to the numerous projects sponsored entirely by the Chemical Corps, there are many cooperative activities with other branches of the Army and Navy. The Command also negotiates and supervises numerous research contracts with universities, industrial laboratories, and governmental agencies which are staffed and specially equipped to conduct certain types of fundamental research. Chem. Eng. Div. Chief, Col. J. H. Ranges, is also Chief of the Engineering Division.

There are at present 16 officers and approximately 550 civilian employees in the Command engaged in work on approximately 102 active projects of research and development. Both duty and Burn

Col. Creasy New R & E Chief



COL. WILLIAM M. CREASY

Maj. Gen. Alden H. Waitt, Chief of the Chemical Corps, recently announced an important change in assignment in his Corps. Col. William M. Creasy was appointed Chief, Research and Engineering Division of General Waitt's office with station at Army Chemical Center, Maryland. He replaces Col. Charles E. Loucks, who is reporting soon as the Chemical Officer, European Command.

Colonel Creasy, of Wilmington, N. C., graduated from West Point in 1926 with a B.S. degree and obtained his M.S. degree in Chemical Engineering at the Massachusetts Institute of Technology in 1936. He is a member of the American Chemical Society and the American Institute of Chemical Engineers. He has served at the Chemical Center for six different tours of duty in every grade from Second Lieutenant to Colonel and has had a varied and distinguished Army career. In addition to General Staff duty, he has served in the Air Force, the Field Artillery, and the Chemical Corps. His Chemical Corps assignments have embraced the fields of production, inspection and technical as well as troop duty in both the Zone of Interior and Hawaii. Wartime duty included 30 months overseas in the China-Burma-India Area, where he held key assignments

on the staffs of Generals Stilwell and Wedemeyer and Admiral Mountbatten. He was Deputy Commander of Services of Supply, China Theater.

His American awards include the Distinguished Service Medal, Legion of Merit, Bronze Star Medal, and the Pacific Theater Ribbon with four battle stars. Decorations by the Chinese Government include the Collar Order of the Pao Ting which was presented personally by Generalissimo Chiang Kai-Shek.

Prior to reporting for his new assignment, Colonel Creasy was serving as Deputy to Lieut. Gen. Henry S. Aurand, Director of Research and Development, General Staff, Department of the Army.

Third Annual Meeting

(Continued from page 15)

younger officers of the Reserve Corps and the younger members of the Armed Forces Chemical Association.

"There is a general feeling among the senior officers of the Reserve that they have seen their last war and they are going to step down and they are going to become inactive. I urge you gentlemen in this category to put that idea out of your minds. In any war of the future you, as a director of a business, or as a school teacher, are just as liable to be a target as the soldier in the front line with a gun. If you are going to survive you are going to have to be a member of the team. We need you old heads with the Reserve units to help carry the load of training the younger men of your organization."

Colonel Barker then discussed the operation of the Chemical Corps School, but as most of the matter embraced in his talk is covered in an article by him in this issue of the *Journal*, this report omits these remarks.

Adjournment

After the reading and acknowledgement of various letters and wires offering good wishes to the Association, a rising vote of thanks was offered Honorary President King for the splendid accomplishments of his administration. The meeting thereupon passed a motion to adjourn until the succeeding year.

Col. Loucks to EUCOM



COL. CHARLES E. LOUCKS

Colonel Charles E. Loucks, Chief, Research and Engineering Division, Office Chief Chemical Corps, has been assigned to Hq. EUCOM, as Theater Chemical Officer.

Colonel Loucks was appointed a Second Lieutenant in the Coast Artillery Section of the ORC in May 1917, and was appointed Captain, Regular Army, 1 July 1920. He was detailed to the Chemical Corps and transferred to Edgewood Arsenal, Maryland, in 1925.

In 1926 he attended the Chemical Warfare School and graduated from the Line and Staff course, following which he served at Edgewood Arsenal on various arsenal duties and later with the research and development divisions. In 1929 he was detailed to the Massachusetts Institute of Technology to take a course in Chemical Engineering Practice, and in 1931 he was awarded the degree of Master of Science. He returned to Edgewood Arsenal and for eight years served first as Assistant Technical Director and then Technical Director. He attended and graduated from the Field Officers' Course of the Chemical Warfare School in 1938. In 1939 he was detailed to the Army Industrial College, graduating in June 1940.

He was transferred to the American Embassy, Paris, France, as Assistant Military Attache, arriving there on 7 June 1940 via Genoa, Italy. He was evacuated to Bordeaux on June 9 and due to the capitulation of France and the German occupation, departed from Hendaye, France, on July 4 for London, England, via Spain and Lisbon, Portugal.

He arrived in London on 11 July 1940 and served there as Assistant Military Attache during the Battle of Britain. While on this duty he was promoted to Lieutenant Colonel. He returned to the United States in March 1941. He was then assigned to duty in the Office of the Chief of the Chemical Corps and in the following July was appointed Executive Officer.

From August 1945 to October 1945 he served as Chief Chemical Officer, Hq. USASCOM "C" and from October to December 1945 as Chief Chemical Officer, GHQ, AFPAC.

Subsequent to his return to the United States he was assigned as Assistant Chief, Research and Development Division, Office Chief, Chemical Corps, and in September 1946 was made Chief, Research and Development Division.

Colonel Loucks has the following awards and decorations: DSM, Legion of Merit, Army Commendation Ribbon, American Defense with cluster, World War I Victory Medal, World War II Victory Medal, EAME Theater Medal, Asiatic-Pacific Theater Medal and Army of Occupation Medal.

PERSONNEL NOTES

Philip T. Kirwan, Technical Services Division, Chemical Corps Technical Command, Army Chemical Center, Md., has been appointed Historian for the command, in addition to his other duties.

Francis W. Stengle, Technical Services Division, Chemical Corps Technical Command, Army Chemical Center, Md., formerly curator of the Chemical Warfare Materiel Museum, is now with the Editorial Branch of that division as technical editor.

Miss Catherine L. Leightner, technical editor, Editorial Branch, Technical Services Division, Chemical Corps Technical Command, Army Chemical Center, Md., has transferred to the Information Branch of that division.

To Our Membership

(Continued from page 20)

This memorandum is, of course, not limited to members who attend the meeting. It is our idea that it should be mailed with the proper modifications to your entire mailing list. To give an idea of how well it is working, the Armed Forces Chemical Association, at Edgewood, as of May 31, has 513 members. Chicago, where this method originated, has 495. This is a good indication of its membership-getting value. Headquarters would appreciate your reaction to the suggestion, and let us know if your reaction is favorable, and when you would try it out and the results obtained. Headquarters will help.

We have a quantity of past issues of the *Journal*. If you desire, we will send you a quantity of sample copies as long as they last. Remember, also, in your planning that after the first year of our existence, after the first flush of enthusiasm wore off there were many members who did not renew. Now, as our Association progresses, many of these former members will be glad to join again if they are properly solicited. It should be brought to the attention of all members who are delinquent in their dues that the closing date for the directory has been advanced to June 30, and it is our intention to incorporate this directory of members and their addresses with the amended constitution and by-laws in a convenient 6x9 booklet.

I have tried to cover this subject in as few words as possible. I am afraid I did not succeed. However, I want to add a few more words. Although our personnel at headquarters is small, we will be glad to accept names of eligible prospects, send them material, such as "questions and answers," and do everything we possibly can to assist your committee.

This little booklet contains the Association's objectives and extracts concerning our work, from speeches from the Secretary of the Army, Chief Field Forces, and Chief Chemical Corps.

MR. FRED M. JACOBS

Washington, D. C.

DEAR FRED:

Congratulations on a very fine meeting at Edgewood. Everyone who attended had an excellent time—so much so that the renown of their experiences has spread far and wide. As a result we are getting reports of its success from many who were not able to make the trip.

JEROME F. MCGINTY,
President, New York Chapter

July, 1948

Years of Progress

YEARS of PROMISE

The Progress of Pemco during the past 38 years reads like the Progress of the Porcelain Enameling Industry. Year after year new ideas—new developments have followed one another from Pemco Laboratories and Pemco Plant—to be absorbed by the industry and become common practice. Even though these years were progressive years of accomplishment—the years to come hold even greater promise of new things from Pemco. A remarkable, new and tremendously enlarged laboratory; additional smelting facilities; new adventures in Colors for the Porcelain Enameler—the Glass maker and the Potter. New bodies, new glazes—a host of developments that 'til now were just ideas will find their way into production lines in the immediate "Years of Promise." For advancements in your field of endeavour "look to Pemco." For the answer to your problems, it is Pemco's Promise—that which has gone before shall definitely be surpassed by that which Pemco offers now—in Research—in Service—in Product—in Performance and in Matchless Value.

PEMCO

CORPORATION

BALTIMORE



MARYLAND

Page Thirty-nine

AN AIR GUN FOR TESTING BOMB PERFORMANCE

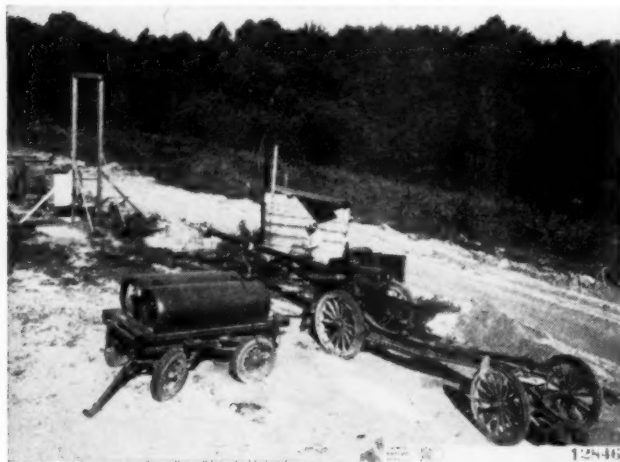
To test the performance of small bombs without the necessity of dropping them from an airplane, the Chemical Corps devised an air gun for projecting these bombs against a target at known velocities.

A nest of three tubes of varying diameters and 18 feet long was inserted into the barrel of a 155-mm. howitzer. The tubes extended inward as far as the firing compartment of the howitzer. Air seals were provided for each size tube. When a larger tube was used, the next small tube or tubes were removed.

A gasoline-driven air compressor, capable of delivering air at pressures up to 800 p.s.i., and two air receivers were provided. Air from the receivers was conducted to the firing compartment of the howitzer by means of a 3-inch pipe, fitted with a solenoid-operated valve. The bomb to be tested was placed in the tube of appropriate size, a wooden driving disc to which was attached a leather obturating cup (to prevent escape of compressed air) was inserted in the tube behind the bomb, the breech compartment was closed and air was admitted by closing the electrical circuit operating the solenoid valve. As the bomb left the muzzle it broke a wire on the solenoid circuit and caused the air valve to close.

Velocities were measured by two wire screens, separated by a known distance, placed in the path of the bomb. At each screen the bomb broke an electrical circuit and caused a spark puncture on a revolving chronograph. The distance between punctures was readily converted into seconds of time and thence into bomb velocity.

The air gun was designed by F. R. Weaver and H. M. Brandt of the Munitions Division, Technical Command, Army Chemical Center, Maryland.



Air gun for testing bomb performance

"PITTSBURGH" COAL-CHEMICALS

ACTIVATED CARBON
ALKYL METHYL PYRIDINIUM CHLORIDE
ALPHA NAPHTHYLTHIOUREA
ALPHANITRONAPHTHALENE
BENZOL—MOTOR, NITRATION, PURE
CREOSOTE
CRESOL—META PARA, ORTHO
2,4-DICHLOROPHENOXYACETIC ACID
DINITRO-ORTHCRESOL
NAPHTHA, HEAVY SOLVENT
NAPHTHALENE
PARA AMINO PHENYL MERCURIC ACETATE
PHENOL
PHTHALIC ANHYDRIDE
PICOLINE—ALPHA, BETA AND GAMMA
PIPE LINE ENAMEL
PYRIDINE—MEDICINAL AND INDUSTRIAL
SODIUM CYANIDE
SODIUM THIOCYANATE
SULPHATE OF AMMONIA
SULPHURIC ACID—60°, 66° AND OLEUM
TAR ACID OIL DISINFECTANTS
TAR—CRUDE AND ROAD
TOLUOL—NITRATION AND COMMERCIAL
XYLOL—10°, 5° AND 3°



**PITTSBURGH
COKE & CHEMICAL CO.**
GRANT BUILDING PITTSBURGH 19, PA.

Personnel News

MAJ. ROBERT A. OWENDOFF TRANSFERRED TO PINE BLUFF, ARK.

Major Robert A. Owendoff, Chief, Property Disposition Branch, Supply and Procurement Division, Office Chief, Chemical Corps, has been transferred to Pine Bluff Arsenal.

Major Owendoff has been on duty since 1939. He served in the Office Chief, Chemical Corps from March 1940 to April 1943. He was with the XVI Corps in the European Theater from December 1943 to September 1945.

Subsequent to his return to the United States he has been on duty with the Office Chief, Chemical Corps.

30 YEARS IN OFFICE, CHIEF CMLC

Miss Helen McCormick on 27 May 1948 was honored on the completion of 30 years' service in the Office Chief Chemical Corps. She was presented with a gold watch by her fellow workers.

APPOINTED EXECUTIVE OFFICER, OFFICE CHIEF CMLC

Major James O. Quimby, Jr., has been appointed Executive Officer, Office, Chief, Chemical Corps, vice Lt. Col. Robert W. Breaks.

Major Quimby was appointed 1st Lt. Chemical Corps, Regular Army, in July 1946.

His service was at Fort Myer, Virginia; Fort Bragg, North Carolina, and Camp Pickett, Virginia prior to serving in the European Theater from June 1943 to October 1945.

Subsequent to his return to the United States, Major Quimby was stationed at Fort Bragg, North Carolina.

He has been awarded the American Campaign Medal, the EAME Medal, six battle participation stars and the French Croix de Guerre with Bronze Star.

CAPTAIN GOLDSMITH DIES

It is with regret that we have learned of the death of Captain Albert B. Goldsmith, 01036159, on 17 February 1948.

Captain Goldsmith, whose home address was 3520 Park Lane, Birmingham, Ala., graduated with the 10th OCS Class and was commissioned 2nd Lieutenant 14 November 1942. He served at Camp Sibert, Alabama, until his assignment with the 88th Separate Chemical Mtr. Battalion and departure for overseas duty in April 1944.

Captain Goldsmith was awarded the Bronze Star Medal while in the Asiatic-Pacific Theater.



COL. ROBERT W. BREAKS

COL. BREAKS TO PACIFIC

Lt. Col. Robert W. Breaks, Executive Officer, Office Chief, Chemical Corps has been assigned as Chemical Officer, Army Field Forces, Pacific, Fort Shafter, T. H.

Colonel Breaks graduated from West Point Military Academy in 1936. He was with the Infantry at Fort Sam Houston, Texas, following his graduation until May 1938, when he was sent to Schofield Barracks in Hawaii. While in Hawaii he was promoted to 1st Lieutenant and assigned to the Chemical Corps.

Returning to the United States he was at Edgewood Arsenal, where he graduated from the Chemical Warfare School in 1940.

In 1942 Colonel Breaks was transferred from the Office Chief, Chemical Corps to the command of the 2d Separate Chemical Battalion at Fort Bragg, N. C. It was this battalion he commanded in combat overseas.

Subsequent to his return to the United States he served as Executive Officer, Office Chief, Chemical Corps.

COL. KING TO JAPAN



COL. DELANCEY R. KING

Colonel Delancey R. King, Assistant Deputy for Management, Office Chief, Chemical Corps, has departed for his overseas assignment in Japan.

Colonel King has been with the Office Chief, Chemical Corps, since February 1942, and has served as Chief, Field Publications Division; Executive Officer, Res. & Development Division; Executive Officer of Control Division; Chief of Control Division; and as Asst. Deputy for Management since January 1947.

Colonel King served during World War I and World War II, and has been awarded the American Campaign Medal, World War II Victory Medal, Distinguished Service Cross, World War I Victory Medal, Purple Heart, Legion of Merit, Army Commendation Ribbon, Military Cross (British), Croix de Guerre (French) and Mexican Border Campaign.

Compiled at your request . . .

A VOLUME ON CHEMICAL WARFARE SERVICE

What is chemical warfare? How is it carried on? What problems does it involve? What is its relation to other branches of the service? These were some of the innumerable questions which flooded the Chemical Corps Association during the last war.

Now, in answer to those requests for information, the staff of the Association has put together in one book the story of its organization and activities. Chemists, chemical engineers, and physical chemists will find "Chemical Warfare Service" of great value when it comes to digging for complete information on incendiary bombs, biological warfare, poison gas, and other such developments which are still so essential to keep us ready for future emergencies.

Chemical Warfare Service in World War II
222 pages, illustrated \$4.00

Published by the
**Armed Forces Chemical
Association**

Room 523, Portland Bldg.
1129 Vermont Avenue Northwest
Washington 5, D. C.

VULCAN

DESIGNS AND BUILDS COMPLETE PLANTS AND EQUIPMENT FOR THE PROCESS INDUSTRIES

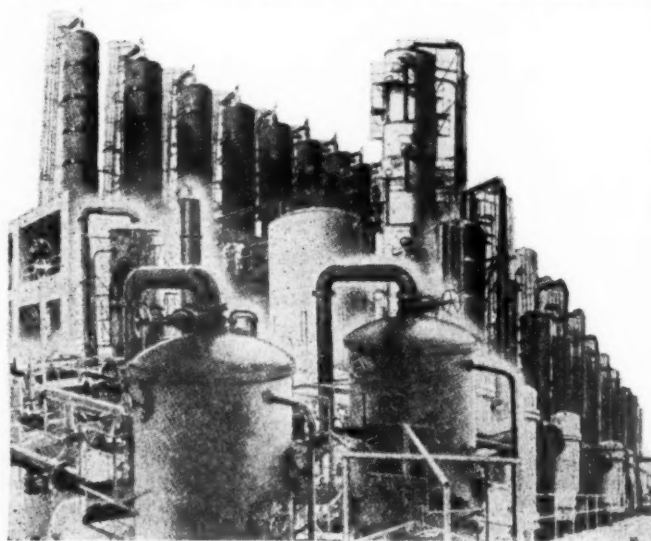
For almost a half century, Vulcan has furnished the Process Industries with complete chemical processing plants and specially-engineered and fabricated equipment involving distillation, evaporation and extraction operations.

With this background of experience, the Vulcan organization effectively coordinates its complete pilot plant and laboratory facilities, competent engineering staff and modern plant equipment into rapidly evolving projects from initial conception into efficient processing plants.

Vulcan | distillation
evaporation
extraction
processes and equipment

The Vulcan Copper & Supply Co. - Cincinnati, Ohio

PILOT PLANT	SHOP FABRICATION
PROCESS DESIGN	FIELD ERECTION
MECHANICAL DESIGN	INITIAL OPERATION



Wallace & Tiernan's War Story

October 23, 1944

World War II, though often called a war of machines, was in actuality—perhaps more so than any war in history—a war of men—and of women. Men and women on the field of battle, and men and women in homes and factories, each with his part to play and each bound unto the other in a single purpose. The men and women of W&T are proud of the role which was theirs, and proud, too, of their performance which, in September 1944, for the fourth time, earned for them the coveted Army-Navy "E" Award.

The performance which merited this recognition was twofold—first, the delivery of war goods ranging from special pharmaceuticals to harbor defense apparatus, and second, a willingness and ability to undertake and carry through new and complex problems. W&T's record in the field of chemical warfare—primarily the development and production of anti-vesicant ointments—called for a full measure of both. It was the result of ingenuity, hard work and the wholehearted cooperation of the technical and procurement personnel of the Chemical Warfare Service.

In 1934, war, in the minds of most, was but a remote possibility. Nevertheless, technicians at Edgewood Arsenal, while neither seeking nor shrinking from gas warfare, knew that they must be prepared for such an eventuality and were working toward the development of adequate protective materials. At the same time, W&T's Research Department, having pioneered in the field of chlorine compounds, recognized the problem and saw, too, that some of their activities lay in the field of vesicant gas protection. Accordingly, in June of that year, at the suggestion of Medical Department personnel stationed at Edgewood Arsenal who were familiar with the Wallace & Tiernan work on chloro compounds and their solvents, including triacetin, Dr. Franz C. Schmelkes (Assistant Director of Research at Wallace & Tiernan until his death in 1942), called on Colonel White to discuss the W&T work with triacetin as a solvent. This technique was subsequently used by Edgewood Arsenal and became the basis for all future anti-vesicant ointment formulae.

Following this original meeting there ensued a period, which might be called the formative stage, during which work was continued by both groups until December of 1940. At that time, under pressure of war in Europe, the pace was accelerated and in January 1941 W&T undertook the



WILLIAM J. ORCHARD
President, Wallace & Tiernan Products, Inc.

initial production of two different formulae developed by Edgewood Arsenal and also entered into a research contract to continue experimental work.

Inasmuch as these ointments, known as M-1 and M-2, were new products and never previously manufactured, the next month was devoted largely to continued research, pilot plant operation, conversion of part of the existing W&T chemical plant and efforts to locate competent subcontractors and adequate sources of raw materials. In spite of difficulties, including the fact that neither raw materials of the desired grade nor manufacturing equipment of the special types required were available anywhere in the country, the first production quantities were prepared in less than two months.

The W&T Research Department soon determined that the M-2 ointment was unsatisfactory due to its instability and production was discontinued in March 1941. The M-1 ointment, though

July, 1948

Page Forty-three

not wholly satisfactory either to W&T or to the Chemical Warfare Service, was continued in production since the basic formula appeared to be sound, and work was intensified to locate and eliminate the detrimental factors. By September it was decided to suspend all production until the experience gained could be put into practice and work was immediately started on the erection, in one of the existing W&T buildings, of a plant specifically designed for the production of M-1 ointment. Thus, December 1941 found W&T equipped, in the Chemical Division, with a small but new plant, the technical background of many years' work in the field of chlorinated compounds and, most important, nearly a year of ointment production experience.

Casual observation would brand such assets as small fruit to show for nearly a year of arduous, often heartbreaking, labor, yet the actual accomplishments of that year are almost without measure. Starting with little more than an idea, there was a plant, trained personnel and technical experience to carry it through to fruition. Some of the problems back of this achievement are worthy of note.

Anti-vesicant ointments of the types and stability proposed were not a matter of experience. They had never been manufactured before, therefore there was no prior art to draw upon, only W&T's resourcefulness and experience with other chlorine compounds.

One of the first problems encountered was the fact that some of the raw materials required were either not available in the proper grade or could not be obtained in sufficient quantity. To overcome this difficulty, W&T developed a new method for the manufacture of Dichloramine T and set up a plant for its production. At the same time, research was carried on in connection with the production and use of Dichloramine B, which subsequently supplemented the Dichloramine T in the finished ointment.

The second and perhaps greatest difficulty was encountered in the mixing of the ingredients and the packaging of the finished product. The M-1 ointment was wholly different from any ointment ever previously manufactured and many of the problems could only be solved by a trial and error method. For example, it was found that the use of standard tube filling machines resulted in contamination of the product because even during short contact period with the filling equipment it picked up minute traces of heavy metal which resulted in rapid decomposition. There were also many other similar problems such as determination of the temperature at which the ingredients

must be mixed, the development of a satisfactory liner for the collapsible metal tubes and the evolution of suitable tests for both raw materials and finished product.

The solution of these problems, in which W&T technical and engineering organizations cooperated with Edgewood Arsenal, lifted anti-vesicant ointments from a laboratory curiosity to a quantity production item and laid the foundation upon which all future production, both by W&T and other suppliers, was based.

Production in the new plant was begun during the early days of December and gradually increased until a rate of over 500,000 tubes per week was reached. At the same time, W&T continued research work for the development and improvement of the product. This work resulted in the award to the W&T organization in December 1942 of their first Army-Navy "E."

During 1943, production was continued, the plant expanded, techniques improved and a formula known as Ointment M-4 was placed in production in lieu of the M-1 ointment. During this period the two primary difficulties were—first, an extreme shortage of triacetin, one of the basic ingredients, which W&T helped solve through bringing additional capacity into the field, and second, an increasing shortage of both skilled and unskilled labor. This latter problem was partially solved through training programs and the utilization of part-time labor.

On October 2, 1943, the National Defense Research Council held a conference with representatives of the Chemical Warfare Service, the Naval Research Laboratories, Wallace & Tiernan and other manufacturers who had subsequently been brought into the field. The purpose of this conference was to establish a coordinated development and production program to take advantage of the combined experience gained during the previous year. As a result of this program covering development of a new formula, camouflage considerations and the design of a new package, a new ointment known as M-5 was conceived. Production of the M-5 ointment was begun in the W&T plant on April 3, 1944 and continued in accordance with military requirements until improvement in the war situation terminated all activity.

**GRAY IRON
CASTINGS
NATIONAL FOUNDRY CO.**

of New York, Inc.
2-56 Sanford St., Brooklyn 5, N. Y.
ULster 5-4233

Industry's Viewpoint of Industrial Mobilization Planning

By S. W. STRING, JR.

Assistant Treasurer, Firestone Rubber & Latex Products Co., Fall River, Mass.

Presented to Commanding Officers, Army Chemical Corps, Army Chemical Center, Maryland, on May 19, 1948, and to the Procurement Planning Branch, Procurement Group, Logistics Division, General Staff, U. S. Army, Pentagon Building, Washington, D. C., on May 21, 1948.

We very much appreciate this opportunity to present to you our impressions of industrial mobilization planning studies resulting from our active participation in this program. We would like, during the next few moments, to sketch a background for this program. We would like you to see how we in industry look at industrial mobilization. What is its purpose? What does it entail? What are the results we expect to achieve, not only for the military but for ourselves?

First of all, as to its purpose, we believe this program is to provide a mutual program of preparedness between industry and the government so that in the event of an emergency production acceleration of war materials will coincide with planned mobilization schedules. To state it another way, we believe that through the current studies with which we are engaged, we will provide the Chemical Corps with a report which will aid them to convince the Congress to appropriate sufficient funds to permit both the government and industry to be ready for "M" Day.

Technically, our contract is completed with the submittal of our report, but that is not the completion of this program as we see it. We hope that these reports as submitted to you by industry will be a tool which you can use in pre-

sending your situation, your problems, and your objectives to the Congress for approval and action.

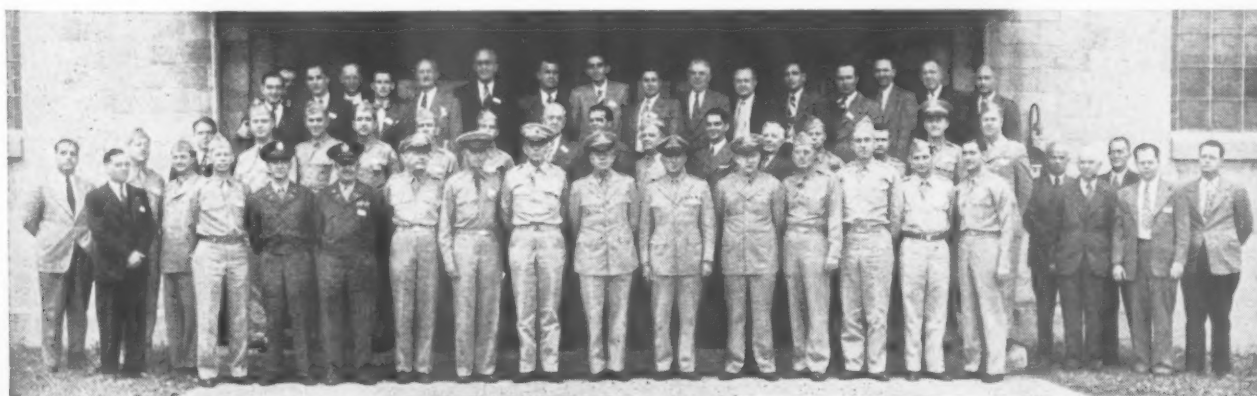
What does this industrial mobilization planning program involve insofar as industry is concerned? It involves primarily a careful and thorough examination of industry's past experience—its "know how," developed during the course of the last two great world wars. It involves careful examination and study of industry's present status and future possibilities insofar as war material production is concerned.

This program further involves an appraisal by industry of the government's present status of preparedness. Surplus materials must be catalogued and correlated. War reserves of machinery, equipment and facilities must be considered. Existing production facilities, such as those located at the Army Chemical Center, must be appraised.

Military requirements anticipated by the government must be carefully analyzed and translated into terms of industrial power requirements, raw material procurement, manpower reserves, and production facilities.

The most important obligation assumed by industry engaging in this program of industrial mobilization planning entails the formulation of preparedness measures which will assure the government that their emergency production schedule will be met following "M" Day. The preparedness measures recommended by industry must be practical of attainment and based upon fact.

In brief, industrial mobilization planning studies require a concise, orderly, graphic and convincing presentation of a recommended preparedness program in terms of *what time will be purchased*, if such a program is adopted.



Procurement Planning Conference recently held at Edgewood

Industry welcomes the opportunity to participate in industrial mobilization planning for a number of reasons. First of all, speaking strictly in terms of American free enterprise, it is "good business." While the profit incentive is small (and we promise not to make mention of that again), the government is willing to pay its own way. Industry did not have to be urged into this program. We welcomed the opportunity. The government has always been and will always be a most important customer of industry and no business man ever depreciates the importance of his customers, particularly when he knows his customer is being fair and rendering full cooperation to a mutual enterprise. The cooperation we have received from the Chemical Corps has been real and without reserve. Therefore, we say again, that we consider participation in this program "good business."

There are, as we have already indicated, other important reasons why we in industry welcome participation in this program. The patriotic incentive is, of course, always present. Industry's record from 1940 through 1945 speaks for itself in this regard. In addition, we recognize that the Armed Services today are laboring under many handicaps. There are many things you would like to accomplish yourselves if sufficient manpower were available to you. We feel, through our participation in this program, that we can "lengthen your arm" and help you accomplish some of these objectives. As we engage in this program, we are looking at the problems presented to us through *your* eyes, in order that the preparedness measures recommended will be *your* recommendations, that through our efforts *you* will have accomplished something.

Active participation in this program prevents industry from forgetting the immediate possibilities of emergency. It alerts our key personnel to these immediate possibilities. After having the facts and importance of this program outlined to us by Chemical Corps officers, there is no doubt in our mind but what we must throw our full weight behind the program and push it to an early conclusion. Participation of industry in this industrial mobilization planning is a good "shot in the arm" for us all.

Forward planning is always important to industry regardless of any military aspect. You are to be commended for inaugurating this program. It will be mutually beneficial to us both. Come "M" Day, no one could estimate the value of this program not only to industry and the government, but to our nation. *We will be prepared!*

There is always a danger in undertaking a

program of as large proportions as this that we may become lost in the maze of its complications and implications. Therefore, we urge that certain objectives be kept clearly before us at all times lest we fail to see the beauty of the forest because of the trees. We have set for ourselves, and for you of the Armed Forces, five objectives which we believe must be kept foremost in our minds if we are to receive maximum benefit from industrial mobilization planning studies.

These studies, first of all, cause us to *think deeply*. We need people today who are willing to *think* and think deeply, thoroughly and soundly. Any problem presented to us becomes less frightening and less complicated if we take time to *think it through*. It is impossible to arrive at a sound preparedness program unless we have taken time to *think deeply*, analyzing the problem from all aspects.

It is essential that we think deeply if we are to grasp the true significance of the problem. We must think deeply in order to *see clearly* the problems that face us. These studies should help us to *see clearly* the problems that face industry and the problems that face the military. Unless we recognize clearly the true situation that confronts us, we certainly cannot prescribe a proper solution. Our second objective, therefore, should be to *see clearly* our immediate situation.

Thirdly, if the study has provoked us to think deeply and see clearly, it should also bring us to *feel keenly*. If the job has been done right, we should *feel keenly* the importance of industrial mobilization planning to the military, to industry, and to the entire nation. We shall never forget how keenly we felt when news was received during the preparation of our Phase I Study that the Huntsville Arsenal was to be inactivated. The following is quoted from our report on this subject:

"The over-all picture . . . has been darkened with the inactivation and dismantling of the Huntsville line. This plant had a rated capacity of approximately 5,000 gas masks per day. It is estimated that the value of this equipment is approximately \$250,000, based on prewar prices. If bought at current market prices, its cost might be double this figure. It is very unfortunate that the Huntsville Arsenal had to be decommissioned inasmuch as the standby assembly plant was of such a size that a substantial portion of the masks specified on the emergency production schedule could have been produced by it. Should the aforementioned equipment be sold or scrapped, it would be necessary to replace it at great cost to the government. The time lost, furthermore, in

its replacement after "M" Day would be at least nine months, probably longer."

This excerpt gives you some idea just how keenly we have come to feel about this program.

The fourth objective is one which requires courage. It would be of no avail to think deeply, see clearly and feel keenly about this program unless we were moved to *speak boldly*. This requires special courage on the part of civilian industry when we are called upon to address such bold remarks to a military assembly such as we have here today. We realize that you probably will not agree with everything we say through industrial mobilization planning studies, but if our reports bring us all to think deeply, see clearly and feel keenly about this program our bold speech will have been worth while. We believe it is the only kind of speaking you want. Here is another example quoted from our Phase I gas mask report which we believe illustrates well what we mean when we say that through our participation in this program we feel compelled to *speak boldly*:

"These eighteen measures complete step I of this preparedness program at a total estimated cost of \$26,182,000. This represents the minimum preparedness program that the Chemical Corps can afford if the emergency production schedule is to be achieved. Admittedly, it is a

large step, emphasizing the inadequacy of the current status of preparedness.

"Even after accomplishing step I prior to "M" Day, the emergency production schedule will not be met for 10.5 months and no surplus capacity is anticipated thereafter. If any one facility fails, requirements will *not* be met. There are no safety factors."

Yes, that represents bold speech, but remember it is based on our having thought deeply, seen clearly and felt keenly the situation which faces us insofar as gas mask production is concerned. We feel, therefore, that it is worthy of your deep consideration.

We believe the fifth and final objective to be gained through industrial mobilization planning studies is that it should compel us to **ACT PROMPTLY**. All of the previous four objectives are useless unless they compel us to act promptly. All of the time, money and energy expended during the course of these studies will be lost unless motion becomes the password.

Through our active participation in this industrial mobilization planning we of necessity have had to *think deeply*, to *see clearly*, to *feel keenly*, and to *speak boldly*. We recognize the importance of *acting promptly*. We hope our work will lead you to the same conclusions, that together we can convince the Congress to **ACT PROMPTLY** on behalf of our nation.

DRYDEN RUBBER DIVISION

SHELLER MANUFACTURING CORP.,

1014 SOUTH KILDARE AVENUE

Chicago 24, Illinois

*

MANUFACTURERS OF

Molded Mechanical Dense Rubber . . . Molded Hard Rubber . .

Extruded Rubber . . .

Chemically Blown Sponge Rubber . . . Rubber Heels and Soles

Rubber and Electrical

Friction Tape

*

. . . Factories . . .

CHICAGO, ILL.

KEOKUK, IOWA

SPRINGFIELD, ILL.

Flame Throwing Seabees

By COL. GEORGE F. UNMACHT, *CmlC*

(Reprinted by permission from the United States Naval Institute proceedings, April, 1948)

Much has been written about the variety of duties performed by Seabees, but an account of their service has never been told in connection with the pioneering development, actual manufacture and actual use in battle of the Tank Mounted Flame Thrower, which had its humble beginning on a vacant field at Schofield Barracks, Hawaii.

The Commanding General, Pacific Ocean Area, firmly believed that fire and flame would eventually overcome the Japs. He wholeheartedly supported the Chemical Warfare Service in its efforts to produce practical fire and flame weapons. (Ironically, it was considered perfectly proper to ruthlessly burn up the enemy, but absolutely inhumane to use gas.)

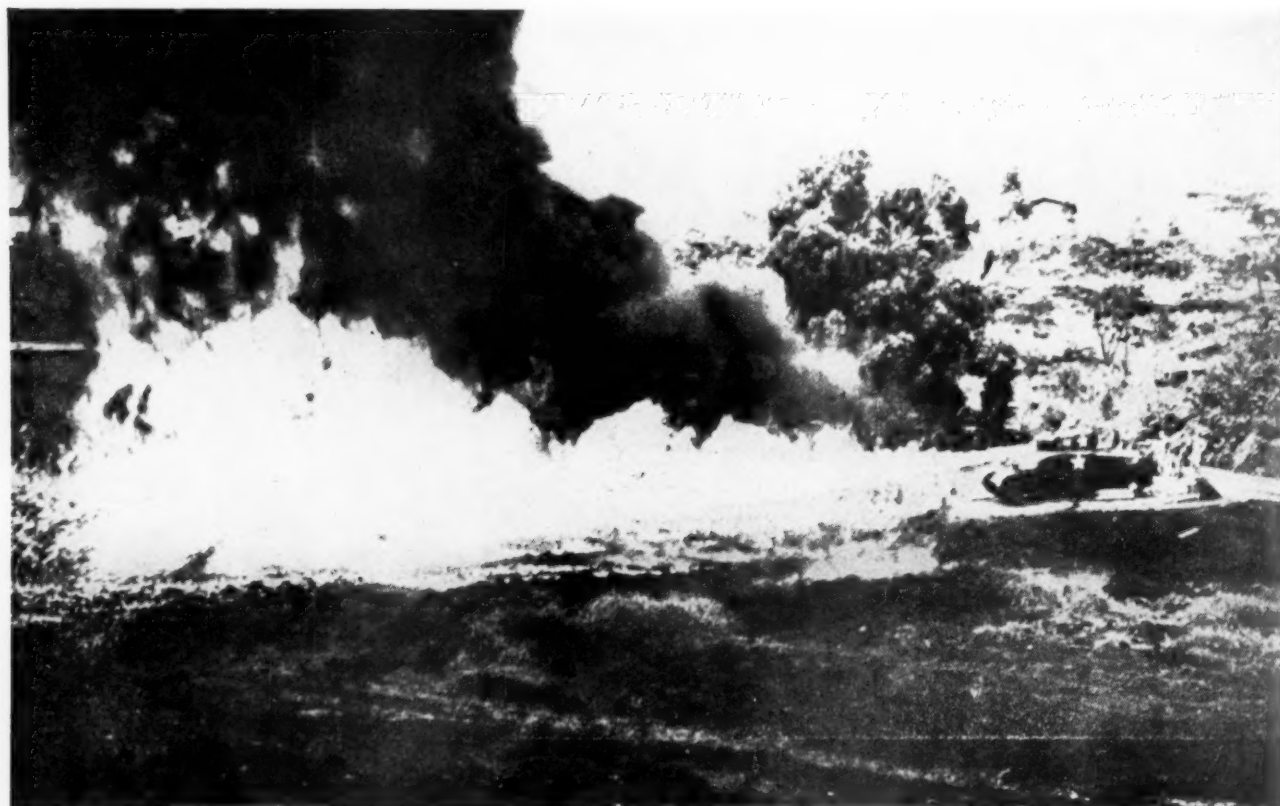
Tank mounted flame throwers became the outstanding weapon in routing Japs out of caves and pill boxes. The demand became very great. By the time of the bloody battle of Okinawa, these grim destroyers had reached such popularity that our troops cheered whenever the flame

thrower went up the line leading the assault on the enemy.

TARAWA

At Tarawa, November 23, 1943, the Second Marine Division used sixty portable flame throwers which had been issued to them by the Chemical Warfare Service. Their successful employment in a bloody and costly fight killed hundreds of Japs in addition to saving many Marine lives. At a later date, when the writer was asked to explain the issue of Army flame throwers to Marines, he replied, "They were gathering dust in a warehouse so we released them to kill a lot of Japs at Tarawa."

From this experience, it was apparent to the writer that a tank mounted flame thrower, giving a larger volume of fuel and protection, would effectively reduce our casualties. Mechanized flame throwers had been employed by Russians and Germans, but little information on them was available in this country. Meanwhile, a few Canadian Ronson Flame Throwers were brought in which were designed for mounting on the Bren Gun Carrier, a vehicle poorly adapted for Pacific operations. LVT's were tried out but too many



BUILT TO SMOKE OUT THE JAPS

Testing fuel in a flame thrower tank built at Schofield Barracks, T. H.

disadvantages resulted. The officer in charge of all flame thrower tank development in the Pacific Ocean Area decided that the medium tank was the proper vehicle for flame throwers, but unfortunately no medium tanks were available. Twenty-four obsolescent M-3 light tanks were made available by the Ordnance Department. The 43d Chemical Laboratory Company went to work. Fuel tanks were manufactured locally, much redesign was carried out, and the completed weapon appropriately named "Satan." Demonstrated April 15, 1944, it was unanimously adopted.

At this time several Seabees under the direction of a Chief Warrant Officer (later Lieutenant (jg) (CEC) U. S. Navy), were directed to assist in the modification and inspection necessary for combat readiness. This technical assistance by the Seabees was later to be of greater assistance in furthering the production program of flame thrower tanks. The fuel capacity of these twenty-four tanks was only one hundred and seventy gallons, with a maximum range of sixty to eighty yards. All twenty-four tanks were used by the Second and Fourth Marine Divisions at Saipan and proved very effective. The operators were enthusiastic, which spoke well for the instrument. Whenever the Marines and Infantry were held up, flame thrower tanks were called. At one point two hundred Japs were holed up in a cave with two openings. Machine guns were set to cover one opening; the flame thrower tank, protected by medium tanks, approached the other opening and fired a burst of flame. The Japs ran in terror from the flame thrower fire into the machine gun fire. One hundred and fifty were killed and fifty surrendered. Numerous similar experiences occurred.

M-4 FLAME THROWER TANKS

On August 17, 1944, just as the Tenth Army under the command of Lieutenant General Simon Bolivar Buckner, Jr., was being formed, a demonstration was held for high ranking officers of all services at which all types of developments on flame thrower experiments were demonstrated. It was then decided to mount flame throwers in medium tanks of the M-4 series with maximum fuel capacity consonant with operating efficiency. Initial requirements were set at fifty-four for use on Okinawa. Work was begun. A composite group was set up with Navy personnel to assist Chemical Warfare personnel. CINCPAC approved the request for the services of an officer and twenty-five Seabees from the 117th Naval Construction Battalion. This group of experienced technicians did much of the basic work on

the mechanized flame throwers. In a few weeks two flame throwers were mounted in experimental models and appropriately named "Hell's Afire" and "Confused Buster." Modifications were made, guns tooled up locally by Seabee, Army, Navy, Marine Corps, and a few civilian technicians. It was truly a unified composite organization, all enthusiastically and happily working together for the common objective. Almost daily improvements were suggested and adopted. One Seabee technician overnight machined a gun to fit inside the 75 cm. tube. Tenth Army accepted the model. On November 1, 1944, it was designated POA-CWS "75" H-1 H-2, with a fuel capacity of 290 gallons.

IWO JIMA CAMPAIGN

Just about this time, the Iwo Jima campaign was entering the initial planning stage. Fleet Marine Force requested urgent priority of eight of these flame thrower tanks to be mounted in M-4A-3 tanks, work to be completed by November 30, 1944. Actual approved order by CINCPAC was received November 15, 1944. On November 30, 1944 these tanks were delivered to the Marines.

SEABEES EXCHANGED FOR TANKS

In order to meet the Tenth Army deadline for fifty-four flame thrower tanks for use at Okinawa, it was agreed in effect that in exchange for these eight tanks for the Marines, we would receive in all fifty-six qualified Seabees. This was done.

Iwo Jima reports again proved conclusively the power and effect of flame thrower tanks. The Fourth Tank Battalion reported, "The Flame Thrower was probably the most valuable single weapon employed at Iwo Jima." The Twenty-Third Regimental Combat Team reported, "Highly successful. Because of their great utility, more large Flame Thrower Tanks should be provided." Another combat team reported, "Tanks were probably the most valuable single type of armament in the operation. The special Flame Tanks were probably more useful than the others, especially in the rugged northern areas of the Island." The Fifth Tank Battalion reported, "The new Flame Tank is an extremely effective piece of equipment. There should be a Company of these tanks per Tank Battalion."

A Seabee electrician's mate, who actually operated a flame thrower tank in the front lines for twenty days, wrote in a personal letter from Iwo Jima: "One day we were assigned a pocket to burn out. We did in six hours, with four loads of fuel, what a tank battalion and three Infantry Companies had been trying to do for five days. The Infantry would sooner see one flame thrower

tank than a dozen with 75's. Make sure all spare parts go with each tank. I'm using telephone wire for ignition—no spare parts as yet; they are on the ocean some place."

The Commander of the Fifth Marine Division stated, "Events proved that the Flame Thrower Tank was the most important single weapon available to this Division."

OKINAWA

The Okinawa operation clearly demonstrated the successful operation of these fire throwing weapons, and for the first time practical use was made of the hose extension. After the Peleliu campaign, it was seen how difficult it was to get the Japs out of caves in high cliffs such as Bloody Nose Ridge. Overnight our composite Flame Thrower Group produced the answer. "No alibis" was our byword. Our group could "rustle" anything. We discovered that the Navy's 1½-inch fire hose was better than the Army's, so the Navy Yard generously gave all they had in 50-foot lengths, and tanks were supplied with four hundred feet of hose.

The fifty-four flame thrower tanks for the Tenth Army were completed January 25, 1945. The 713th Tank Battalion was converted into a Flame Thrower Tank Battalion and provided sixty additional men to assist the Seabees in flame thrower tank construction, thereby gaining experience in maintenance work.

The 713th was in action continuously at Okinawa from April 7, 1945 to June 30, 1945 (85 days). Thousands of Japs were killed and thousands of American lives saved. Flame thrower tanks were used for flaming forward and reverse slopes of hills and escarpments, clearing fox holes and bottle-shaped spider holes dug in the earth, cliff caves, and ruins of structures. The hose extension was used time and again in reaching pockets of Japs which could not be flamed directly. The Commanding General, Seventh Infantry Division, told the writer of one incident where a captain and a sergeant, under covering fire, reached the top of the escarpment with hose extension, and mowed down several hundred Japs with the deadly flame.

The 713th was credited with killing 4,788 Japs and capturing 49. Our losses were only 8 killed or missing and 111 wounded, a ratio of 40 to 1.

Following Okinawa, construction was started on seventy-two flame throwing tanks for Fleet Marine Forces.

During the period of one and a half years, our Flame Thrower Group on Oahu produced 354 tank mounted flame throwers, composed of eleven different models, and trained 750 Army, Navy, and Marine Corps personnel as operators and instructors in the technique, operation, and maintenance of tank mounted flame throwers. This is demonstrating what can be done in the field with qualified, resourceful, and enthusiastic personnel. Every man performed outstanding work regardless of hours. Men, of their own accord, worked seventy-five hours per week, although the established hours were sixty. Only one accident occurred where a man was burned by acetylene gas while cutting armor plate, causing sixteen days' hospitalization. At least seven members of the group were awarded the Bronze Star Medal.

Many thousands of American soldiers, sailors, and Marines are alive today because flame thrower tanks were used to rout out the Japs. This weapon was conceived, produced, and battle tested in the Pacific with resources locally available.

Statistics show that 226,343 gallons of flame thrower fuel were manufactured at the Chemical Warfare Depot at Schofield Barracks. Mixers were built locally to mix the fuel. To install a flame thrower unit in a tank required 1200 man hours of labor; 1100 electrical connections had to be changed and relocated; 150 pounds of welding rod per tank were used, and 150 parts were specially machined by Seabees for each tank. The estimated cost was between twenty and twenty-five thousand dollars per unit.

This outstanding group of Seabees feel that they have been many times repaid in the thought that they were largely responsible for the saving of thousands of American lives because of the weapon they produced.

<p>★ ★ ★ ★ PROFESSIONAL DIRECTORY ★ ★ ★ ★</p>	
<p>S. N. CUMMINGS 799 Greenwich St. New York, N. Y. <i>Coal Tar Colors</i> Tel. Chelsea 3-1687 Cable Address—Pytamco</p>	<p>HARRY A. KUHN <i>Consultant</i> Chemist and Toxicologist 2653 Connecticut Avenue Washington 8, D. C. Phone Michigan 9023 Columbus 7622 Teletype WA 279</p>



Office of Technical Services, 1948-49

The U. S. Department of Commerce will continue the work of the Office of Technical Services in the next fiscal year, though it must do so with two-fifths of the budget it had hoped to have for the purpose. Operating plans call for trimming but not abolishing services.

Cooperation and liaison with the technical branches of the Armed Services will continue and presumably will be intensified as a concomitant of the national defense program. OTS functions touch the Armed Services directly at three points:

First, OTS is the administrative arm of the National Inventors Council which assists the Armed Services in solving technical problems affecting the national defense. Second, OTS cooperates in placing German scientists brought to this country by the Armed Services in private organizations. Third, the bulk of the OTS collection of technical reports and documents is made available to business and industry only after military declassification proceedings. It may be added that since the OTS collection constitutes a "master file" of American wartime technology, it has become an increasingly useful reference source for military technicians. Naturally, Armed Services inquiries concerning the collection are given priority.

Since its inception in 1940 the National Inventors Council has screened over 200,000 inventions and ideas for the Armed Services. It works this way: The military technical branches draw up statements of urgent technical problems impeding the national defense effort and submit them to the Council. The Council publicizes them among inventors, amateur and professional, throughout the nation. Ideas and suggestions for solving the problems submitted by the inventors are given an initial screening by the Council. If they are pertinent, they are forwarded to the appropriate military technical branch for further study and action. Any interested person may obtain statements of current problems upon request to the National Inventors Council, Department of Commerce, Washington 25, D. C.

It is emphasized that the Council is not concerned with research development contracts for the solution of technical problems, but seeks only to solicit the interest of individual inventors whose constructive thinking on the problems might not otherwise come to light.

Chairmanned by Dr. Charles F. Kettering, the Council consists of 16 outstanding American scientists, military leaders, inventors, attorneys, and industrialists who have their fingers on the pulse of American inventive activity. Two of the Council members are outstanding in the field of chemistry—Dr. Roger Adams, Department of Chemistry, University of Illinois, and Mr. George Baekeland, vice president of the Bakelite Corp. The members of the Council serve without pay. OTS supplies the Council with a small administrative staff in Washington.

The placement of German scientists in private American schools and laboratories, though a small phase of the OTS operation, has paid rich dividends. The scientists were originally brought to this country after the war because they possessed highly specialized information about German technology of interest to the Armed Services. In several instances, after the Germans had divulged their specialized information to the military, it was realized that the scientists could more effectively contribute to the American economy during their stay here by being employed in private organizations. The Armed Services asked OTS to help in placing them. About 50 of them have been placed so far, mostly in colleges, universities, and private research laboratories. Reports of their performance have been uniformly favorable, and in many cases enthusiastic.

The major activity of OTS, however, concerns the acquisition, maintenance, and dissemination of hundreds of thousands of technological reports and documents. This is the activity which most directly affects and contributes to American business and science. It is anticipated that by the end of the next fiscal year, American business will have purchased over \$1,000,000 worth of OTS reports.

Since this activity has required separate administrative units to handle the acquisition of reports, catalogue and abstract them, publicize them, and sell them, it will have to be trimmed to fit the budgetary limitations of the next fiscal year. A \$200,000 budget cannot support a large staff of skilled technical librarians, abstractors, foreign language specialists, and the like.

The key to the OTS technology collection is the *Bibliography of Scientific and Industrial Reports*. Since January 1946 it has appeared weekly, each issue containing about 1500 abstracts of reports.

(Continued on page 58)

Common Catalog and Standard Equipment Projected for U.S. Armed Services

Development of a common catalog system and standardized equipment for the Armed Services is now under way, Mr. Thomas J. Hargrave, Chairman of the Munitions Board has announced. Orders have been issued establishing the Munitions Board Cataloging Agency and the Munitions Board Standards Agency.

The task of the Cataloging Agency is to coordinate the efforts of the Army, Navy, and Air Force in the construction of a uniform catalog of all items used by the Military Establishment in peace and in war. Each item will be provided a single name, description, and identification number, and will be classified in but one supply commodity class.

The function of the Standards Agency is to develop unified agreement on National Military Establishment specifications and engineering standards, and to develop agreements among the Army, Navy, and Air Force on standard designs of equipment and component parts.

Emphasizing the prime importance of achieving a single catalog for the Armed Services, on May 12 the Secretary of Defense wrote to the Secretaries of the Army, Navy, and Air Force:

"I consider it necessary at this time to bring to your attention the great importance I attach to the Armed Services Cataloging Program which has been placed under way by the Munitions Board. It must be understood clearly that I consider the project to be of primary importance to the effective conduct of the business in the Military Establishment; that I believe it will lead most positively to a simple and well understood approach of the three Services to industry, and that I believe its proved results in segmental fields which have been explored demonstrate conclusively such great savings to the taxpayer in the processes of procurement that we in the Military Establishment must not fail to prosecute the project with the utmost vigor, and to secure at the earliest possible date the fullest and most complete utilization of its possibilities.

"Lest there be any misunderstanding of the purpose and any ensuing deflection of effort, the following definition covers what I conceive this cataloging program and its objectives to be.

"The ultimate objective will be to name, describe, classify, and number each unique item used, purchased, stocked, or distributed by the Military Establishment, by such methods and in

such manner that only one distinctive selection of letters and numerals will identify the same item within a bureau or service, or between the departments. The single item characterization will then be used for all functions of supply from original purchase to final field or area of distribution. When the project has advanced sufficiently, each supply system of the Services will select for its own use such categories of items from the central pool as it needs to meet its own purposes, and publish these in such forms as will best further its purposes, but individual identical items will bear the same characterization in every catalog segment thus prepared and used.

"It is estimated that the project will comprise the processing of some 5,000,000 items of military usage. In segments and areas of interest, many of these items have already been described and classified, and the project program must integrate the work already done by the bureaus or services with the least friction, and assign the uncovered areas for field work to the most cognizant agencies.

"It is obvious that the project is expensive; that it will be a burden on the personnel and appropriations of every bureau and service, and will require the most earnest and cooperative effort on the part of every agency to bring it to such substantial completion that it will be continually useful to all. There is being developed under the Munitions Board a coordinating central agency to pick up work already done, to assign new areas for field work, and to eliminate duplication where the same item has been described in two or more category assignments. Purely as an estimate, three years has been set as the time necessary to bring the cataloging program to full utilization. If that goal can be met, we must reach it. We cannot afford to enter a future national emergency without having the military cataloging system so well completed, so well understood, and so well accepted, but that we will reap the full benefits which can be expected from it."

Heretofore, the military Services each maintained different cataloging systems, a factor which made interchange of supplies and equipment difficult, and impeded coordinated military procurement. Natural duplications which occur because of the differences in the catalog systems

will be eliminated in the process of developing the uniform catalog system. It is estimated that the process will eliminate about 50 percent of the five million catalog items concerned in the project.

In announcing the establishment of the two agencies, the Chairman of the Munitions Board stated:

"A common catalog of military items and standardization of military equipment will enhance the combat efficiency of our Armed Services immeasurably. They are absolutely essential components of efficient and coordinated procurement now being achieved for our Military Establishment.

"Development in these fields is required in methodical industrial mobilization planning. Standard specifications will assist manufacturers in production activities and will provide for more

expeditious inspection of products. A common catalog will speed up procurement contracting considerably, and will be of enormous assistance in inventorying.

"Ultimately, these programs will contribute toward the achievement of interchangeability of supplies and equipment among the combat units of the three Services in the field. From the logistics standpoint, the common catalog and standardized equipment will be a godsend. They will mean easier and less costly storekeeping, great reduction in required shipping and storage space, and will expedite supplies to our men in combat during wartime.

"When our Armed Services have achieved these two objectives, the Nation will have unified our fighting equipment as it has unified our fighting men."

Uniform Procurement Regulations Issued for Armed Services

Mr. Thomas J. Hargrave, Chairman of the Munitions Board, has announced the development of uniform procurement regulations for the Armed Services.

Prepared through the cooperative efforts of the Army, Navy and Air Force under Munitions Board supervision, the new regulations have been issued jointly by the Secretaries of the three military departments, and become effective May 19.

They supersede the separate regulations of the three departments, and provide common procurement methods and procedures for all contracting officers and purchasing agencies within the three services. Their adoption marks a major achievement in the effort of the military services, directed by Secretary of Defense James Forrestal, to provide greater efficiency and flexibility in the supply of combat elements of the armed forces, and to effect procurement economy wherever possible.

Announcing the "Armed Services Procurement Regulations," Mr. Hargrave said:

"The issuance of a completed unified document of this magnitude is another substantial instance

of the application of the coordination called for in the National Security Act of 1947. The regulations cover the entire field of the procurement relationship between contractor and contracting officers. They will assure uniform treatment of business matters throughout the world-wide purchasing operations of the Military Departments, and are designed to eliminate many industrial problems which have resulted from lack of uniform military procurement regulations in the past."

The new uniform procurement regulations issued by the Secretaries of the three Services implement provisions of the Armed Services Procurement Act of 1947, Public Law 413, which was passed by the 80th Congress last year, and which also becomes effective on May 19.

The regulations require all three Services to use uniform contract clauses, forms, and termination procedures. Uniformity in the handling by the Armed Services contracting officers of patents, copyrights, and patent interchange agreements are provided for in the regulations along with uniformity in procurement advertising and negotiation.

Water Determination in Tetrachloroethane, Hexachloroethane and Chlorinated Paraffin

By L. WILSON GREENE¹

Authorized reprint from ASTM BULLETIN

The determination of moisture by distilling the sample with a volatile organic fluid immiscible with water was first proposed by Marcusson (7).² Numerous other investigators have developed modifications and improvements in the Marcusson method and have adapted the procedure to a variety of products. The best known is the method of Dean and Stark (4), who used petroleum naphtha or a mixture of benzene and xylene as the distillation medium. Bidwell and Sterling (3) employed toluene for the same purpose.

The foregoing procedures were based on using a liquid lighter in density than water, and the moisture which separated in the distillation was collected in the bottom of a calibrated glass trap. In 1936, Alexander (1) described a method in which carbon tetrachloride, heavier than water, was employed as the distillation medium for determining water in dynamite. Bailey (2) used tetrachloroethylene and designed a special trap to collect the separated water. An improved trap was proposed by Langeland and Pratt (5), while Lindsay (6) has described recently an ingenious tilt trap for use with perchloroethylene as the distillation medium.

The standard Chemical Corps (formerly Chemical Warfare Service) method of determining moisture by distillation does not seem to have been brought to the general attention of analytical chemists, since no reference to it could be found in the regular literature.

It was first developed to satisfy the need for determining the amount of water present in commercial grades of tetrachloroethane. The Dean and Stark calibrated glass trap could not be employed because it was designed for immiscible liquids lighter than water. Tetrachloroethane is, of course, heavier than water and because of this it was necessary to redesign the trap.

By using anhydrous tetrachloroethane and adding measured quantities of water, it was possible to calibrate the trap and to demonstrate that the method was accurate to 0.01 per cent, when a 1000-g. sample was taken for analysis.

¹Scientific Director, Chemical Corps Technical Command, Army Chemical Center, Maryland.

²The numbers in parentheses refer to the list of references appended to this article.

The method has been used satisfactorily for 15 years and it is obvious that, with minor modifications, it could be employed for determining moisture in products similar to the three mentioned above.

PROCEDURES

Tetrachloroethane (Acetylene Tetrachloride):

(U. S. Army Specification 4-502-12A, August 27, 1942; formerly 4-502-12, September 20, 1933.)

Apparatus—The apparatus is shown in Fig. 1. The dimensions given should be carefully dupli-

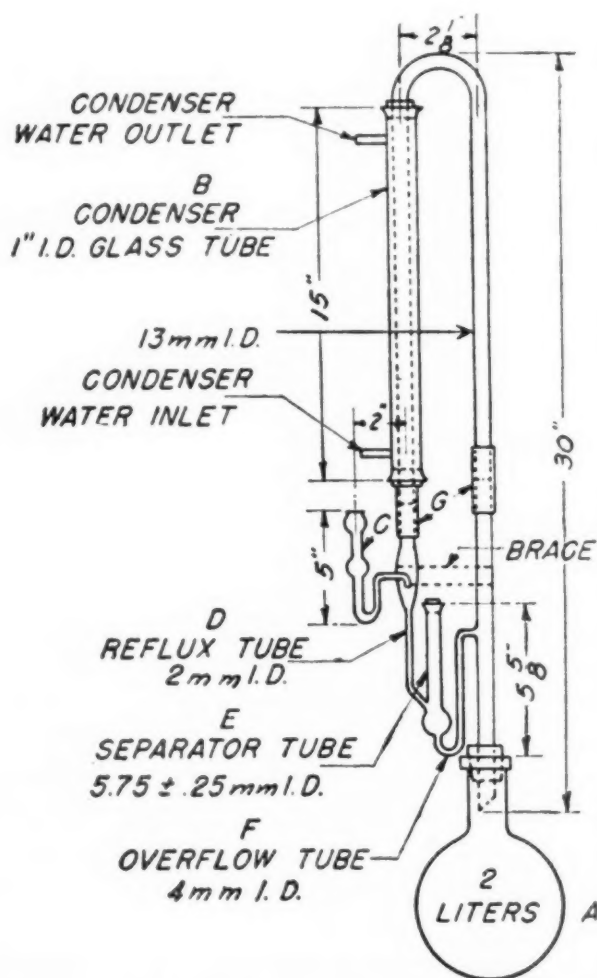


Fig. 1.—Schematic Drawing of Apparatus for Water Determination by the Chemical Corps Method.

cated to obtain satisfactory results. Flask A is a round-bottom, short-neck, 2-liter pyrex flask. The condenser B is connected to the apparatus by two short lengths of rubber tubing G. The vertical portion of the glass tube above the first length of rubber tube is wrapped with asbestos paper to prevent refluxing. A calcium chloride drying tube is attached to tube C to prevent outside moisture from entering the apparatus.

Calibration—Pour tetrachloroethane in the separator tube E until it runs out of the overflow tube into the large flask. Add exactly 2.50 ml. of distilled water from a burette. Measure the height of the water layer in the separator tube. Prepare a measuring scale in which the height is divided into 25 subdivisions, each of which represents 0.1 ml. of water.

Method—Dry the apparatus carefully before use. Weigh about 900 ml. of sample in an Erlenmeyer flask. Pour the contents of the flask into flask A and reweigh the Erlenmeyer flask to determine the weight of sample. Attach flask A to the apparatus. Heat rapidly until the boiling point is almost reached and then more slowly as air is being displaced from the apparatus. Boil at a sufficiently rapid rate to carry any separated drops of water downward into the separator tube. Close the latter with a stopper when the water rises to within one-half inch of the top. Continue the distillation until readings taken at 10-minute intervals show no further increase in the amount of separated water, and the contents of the separator become clear. Using the scale, read the height of the water column and calculate the percentage of water. One division on the scale is equivalent to 0.1 ml. of water.

NOTE—During the war some suppliers of tetrachloroethane experienced difficulty in procuring the apparatus described above. The specification was revised to prescribe the determination of moisture by the cloud-point method instead of by the distillation procedure. Specification JAN-T-247 was issued to cover this revision.

Hexachloroethane:

(Joint Army-Navy Specification JAN-H-235, June 30, 1945; originally U. S. Army Specification 4-503-215, February 17, 1942.)

Apparatus—Same as above.

Calibration—Transfer 100 g. of tetrachloroethane conforming to the requirements of specification JAN-T-247 to flask A and distill as described above. Remove the water from separator tube E and allow the contents of flask A to cool.

Add 1.0 ml. of water from a 5-ml. Mohr pipette to flask A, stopper the flask, and shake it vigorously. Attach the flask to the apparatus and distill again. When the volume of water in the separator tube shows no further increase, as shown by readings taken at 10-minute intervals, measure the height of the water column in the separator tube. If the recovery of the water introduced is less than 95 per cent, examine the apparatus and procedure for sources of error and then repeat the procedure. Prepare a measuring scale as described under tetrachloroethane, except divide it into 20 subdivisions, each of which represents 0.05 ml. or 0.01 per cent water, when the sample taken is 500 g.

Method—When flask A has cooled, following calibration of the apparatus, remove the water from the separator tube. Weigh approximately 500 g. of the sample and transfer it to flask A. Agitate until the sample is completely dissolved in the tetrachloroethane. Attach flask A to the apparatus and proceed with the distillation as described in the method for tetrachloroethane. It is not essential to calibrate the apparatus each time, but it is necessary to distill the water from the tetrachloroethane solvent before adding the hexachloroethane, because the solvent normally contains a small amount of water which should be separated first; otherwise the accuracy of the method will be affected.

Chlorinated Paraffin:

(U. S. Army Specification 4-503-127B, April 15, 1944; originally 4-503-127, May 22, 1931.)

Apparatus—Same as above.

Calibration—Same as described for tetrachloroethane.

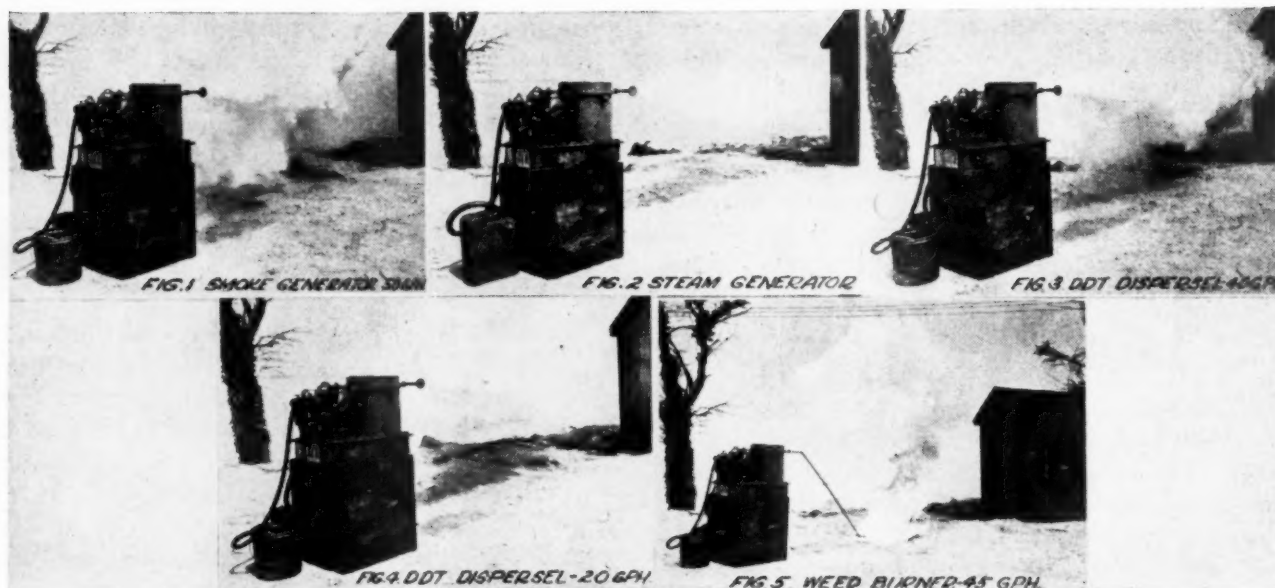
Method—Weigh about 900 ml. of the sample (approximately 1000 g.) in an Erlenmeyer flask. Rapidly pour the contents of this flask into boiling flask A without waiting for the viscous liquid to drain. Reweigh the Erlenmeyer and determine the weight of sample taken for analysis. Agitate until the sample is dissolved and attach flask A to the apparatus. Proceed with the distillation as described for tetrachloroethane.

Acknowledgment:

W. F. Still fabricated the original apparatus and contributed valuable suggestions concerning its design. L. S. Dando furnished most of the specification data. Both are employed by the Chemical Corps Technical Command.

(Continued on page 57)

Conversion of Smoke Generator to Aerosol Disperser



Conversion of the mechanical smoke generator M2 to the aerosol insecticide disperser E15 is one of the peacetime developments carried out by the Chemical Corps. Through the development of a special metering valve and with the addition of a few minor changes, the smoke generator was made adaptable for insecticide dispersal, as well as for smoke generation. Military function of the machine was to screen targets from enemy observation and bombings by vaporizing oil with heat.

When used as a disperser, the unit has a wide range of coverage. The special valve permits from 20 to 50 gallons per hour of insecticide to be dispersed, and a temperature control permits particle-size variations ranging from two-tenths to one hundred microns. These features insure coverage of both large and small areas with a minimum of waste and a maximum of economy. With additional accessories, the unit can be used as a sprayer with a capacity of $\frac{3}{4}$ gallon per minute, as a weed burner, and as a hot water heater when connected to a source of water supply.

The modified disperser is a compact unit, weighing 180 pounds when empty and 250 pounds when filled. It is approximately 16 inches wide, 24 inches high, and 35 inches long, and can be mounted on any suitable type vehicle.

Tests of the disperser E15 conducted with DDT against the Japanese beetle and mosquitoes of various species were very encouraging.

Development of the disperser E15 was carried

out by Howard E. Norton and John R. Bond of the Ground Weapons Branch, Munitions Division, Technical Command, Army Chemical Center, Maryland.

The Industrial Rubber Goods Company

ST. JOSEPH, MICHIGAN

*Manufacturing Specialists
of Molded and Extruded
Mechanical Rubber Goods*

The Industrial Rubber Goods Company

ST. JOSEPH, MICHIGAN

**HOOKER
CHEMICALS**

INDUSTRIAL CHEMICALS

The facilities listed below and the special techniques involved have been developed through forty years of experience in the manufacture of industrial chemicals. Over a hundred regular products and many more research products have been made available through these process facilities.

TYPES OF SPECIAL FACILITIES

Chlorination . . . Hydrogenation . . . Esterification . . .
Phosgenation . . . Sulfhydration . . . Metallic Chlori-
nation . . . Hydrochlorination . . . Fluorination

The Hooker Company is a basic manufacturer of chlorine, caustic soda, muriatic acid, chlorbenzols, sodium sulfhydrate and many other chemicals of large commercial volume. Your inquiries for product information are invited.

Hooker Electrochemical Co.

40 Forty-seventh Street, Niagara Falls, N. Y.

New York, N. Y. :: Wilmington, Calif. :: Tacoma, Wash.

Water Determination in Tetrachloroethane

(Continued from page 55)

REFERENCES

- (1) H. B. Alexander, "A New Moisture Tube," *Industrial and Engineering Chemistry, Anal. Ed.*, Vol. 8, p. 314 (1936). See also W. W. Scott and N. H. Furman, "Standard Methods of Chemical Analysis," Vol. II, p. 1670, 5th ed., D. Van Nostrand & Co., New York, N. Y. (1939).
- (2) A. J. Bailey, "Determination of Moisture in Wood Chips, Sawdust, and Pulp," *Industrial and Engineering Chemistry, Anal. Ed.*, Vol. 9, p. 568 (1937).
- (3) G. L. Bidwell and W. F. Sterling, "Preliminary Notes on the Direct Determination of Moisture," *Industrial and Engineering Chemistry, Vol. 17*, p. 147 (1925).
- (4) E. W. Dean and D. D. Stark, "A Convenient Method for the Determination of Water in Petroleum and Other Organic Emulsions," *Industrial and Engineering Chemistry, Vol. 12*, p. 486 (1920).
- (5) E. W. Langeland and R. W. Pratt, "Improved Trap for Moisture Determination by Distillation," *Industrial and Engineering Chemistry, Anal. Ed.*, Vol. 10, p. 400 (1938).
- (6) W. N. Lindsay, "Distillation Trap for Determining Moisture in Relatively Dry Materials," *Industrial and Engineering Chemistry, Vol. 18*, p. 69 (1946).
- (7) J. Marcusson, "The Determination of Water in Oils, Fats, and Soaps by Distillation," *Mitt. kgl. Material-prüfungsamts*, Vol. 23, p. 58 (1905).

BENZOL—HOW IT'S CHLORINATED

"Benzol—How It's Chlorinated" is the title of a four-page reprint that is now ready for free distribution by the Glyco Products Co., Inc., of Brooklyn, N. Y., and Natrium, W. Va.

This reprint includes a flow sheet describing the processes for making and purifying mono-, ortho- and paradichlorobenzols and hydrochloric acids. Full details of the process and equipment are disclosed. A special section is devoted to a description of the Ranney well, the chief source of water supply for the plant.

Chemical Corps School

(Continued from page 29)

civilian employees. This personnel is distributed through the actual instruction branches of the school; administration and supply; illustration and reproduction work; conduct of extension courses for all personnel of the armed forces in all subjects pertaining to chemical warfare; while the Writing Branch is charged with preparing field and technical manuals, extension courses and texts, and other publications for the Department of the Army, which are the responsibility of the Chief, Chemical Corps. The regular staff of the school is supplemented by Reserve officers who volunteer for active duty for periods of 60 and 90 days. These officers are used where their special training and knowledge, either based on their civilian occupations or upon their military training and experience during World War II, make their services of especial value to the school.

The Chemical Corps School is organized and operated to serve all elements of the Chemical Corps and it is the sincere wish of the Commandant and all members of his staff and faculty that their services can be made as efficient as possible.

TO THOSE WHO SAY . . .

"Our problem is different"

Shortages in experienced personnel, equipment or other facilities may be holding up your research activities. Still, you hesitate to call in an outside research laboratory because this problem is unusual—really different. Whatever it is that makes your problem different—our experience in a wide variety of fields can be of infinite value to you.

But just as important is our ability as an independent chemical research laboratory to approach a new problem objectively . . . to analyze it correctly, and to come up with a solution as quickly and economically as possible.

Particularly well staffed and equipped—with experience in both fundamental and applied research—the Evans Research and Development Corporation is geared to the needs of industry. Complete information about our facilities and the way we work may be had by writing to: S. F. Coneybear, Development Manager. Just ask for a copy of our NEW booklet, *Leadership Through Research*.

-----**EVANS**-----

Research and Development Corporation

250 East 43rd Street, New York 17, N. Y.

Office of Technical Services

(Continued from page 51)

It has been sold by the Superintendent of Documents for \$10 a year.

In the next fiscal year, the *Bibliography* will appear *monthly* instead of weekly. It will be sold directly by the Office of Technical Services at \$10 (\$15 foreign) a year or \$1 (\$1.50 foreign) per single copy. Each monthly issue will list about 2,000 titles of reports and documents, but it will contain fewer abstracts. This will not be as satisfactory as in former years, but business and industry will continue to have the benefit of a reference to OTS materials. In the case of outstanding reports OTS will continue to issue "news digests" for the trade and technical press.

OTS will also continue to sell copies of printed or mimeographed reports. All orders for photostats or microfilm copies of reports, however, will be referred to the Library of Congress which has agreed to take over this mechanical phase of the operation.

In the past year OTS has received and answered some 85,000 inquiries concerning its materials. Some of them are quickly answered. Others require time-consuming individual treatment. The operation of an inquiry service is believed of utmost importance, especially to small business which cannot afford its own research staff. With reduced personnel, OTS does not anticipate that it can handle as many inquiries in the future. Nevertheless, the service will be maintained so far as possible with emphasis on handling inquiries which can be answered with "form" replies.

American trade and professional associations have been most cooperative in recent years in assisting OTS in the evaluation of selected technical documents, particularly original German documents. This cooperative government-industry program will continue and be expanded, since it will remain only for OTS to coordinate the program and announce the results to the business community.

Even though OTS services will be less adequate than before, their continuance on a reduced scale will play an active role in stimulating America's industrial productivity and aiding the national defense.

Page Fifty-eight



GOOD JUDGMENT

The performance of Harshaw chemicals will confirm your judgment in purchasing them. For more than 50 years the selection of Harshaw chemicals has proved to be the correct choice for thousands of buyers. • The Harshaw trademark symbolizes unvarying first-line quality. It assures you that the Harshaw laboratories are striving for perfection and continuously searching for new developments . . . and that control laboratories in each Harshaw plant guard carefully the quality of the products manufactured. • You will make a correct decision . . . exercise good judgment . . . and help yourself to progress . . . when you specify Harshaw chemicals.

THE HARSHAW CHEMICAL CO.
1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

CLEVELAND • CHICAGO • CINCINNATI • DETROIT • HOUSTON
LOS ANGELES • PHILADELPHIA • PITTSBURGH • NEW YORK

Armed Forces Chemical Journal

CHAPTER NEWS

BOSTON CHAPTER

A dinner meeting was held by the Boston Chapter in the Sky Room, Hotel Puritan, on Wednesday, June 16, 1948.

Philip E. Young, President of Acushnet Process Company, New Bedford, and a director-at-large of the National Association, gave a summary of the annual meeting of the Association held at Edgewood on May 20, 21 and 22.

Following this the Secretary reported on the information he had received from National Headquarters on the ROTC medal. It was also reported to the meeting that Lt. Col. Carl Otto, who was a member of the faculty at the University of Maine, had written a special text for the preparation of technical reports under our program of assisting the Chemical Corps school in the preparation of correspondence courses, and he had also "non-experted" two sub courses on meteorology.

Our guest of the evening, Cedric Foster, who is a news commentator with the Yankee network here in Boston, gave us a short, serious, impassioned talk on the dangers of Communism, and pointed out that the group present should find out and try to correct erroneous information that was being given to their employees, and also that, as probably the more important taxpayers in their communities, they should investigate the pay of the teachers in the schools to whom they entrust the education of their children. He also made a few comments on the four-day Governors Conference at Portsmouth, N. H., from which he had just returned.

On May 10th the following General Orders were issued by the Department of Military Science at MIT:

"1. The following awards for distinguished work in the Military Science Department are announced:

"a. To the student in the Chemical Corps Unit of the Advanced Course ROTC at Massachusetts Institute of Technology, designated as the outstanding senior cadet in that unit, the Boston Chapter, Chemical Corps Association, awards a medal in recognition of such accomplishment. The student designated to receive this medal for the year 1948 is: Cadet Colonel John W. Weil.

The Boston Chapter has, in effect, adjourned

activities until the fall, our first meeting being expected for the first week in October.

CHENERY SALMON,
Secretary-Treasurer.

COLUMBUS CHAPTER

The following are the newly-elected officers of the Columbus Chapter of the Armed Forces Chemical Association: Don C. Micheau, president; George A. Rechtin, 1st vice president; F. B. Dahle, 2nd vice president; Charles W. Mason, secretary-treasurer.

The chapter is planning to establish a reference library of Chemical Corps data and manuals for use by its members, reserve personnel, local industrial and research organizations.

Efforts are being made to increase the membership. A well-rounded program is being arranged for the fall and winter meetings.

CHICAGO CHAPTER

The Chicago Chapter held a highly successful meeting on April 6 in the Assembly Hall, Civic Opera Bldg. There were 112 members and guests present. Many prominent industries in the Chicago area were represented at this meeting.

Col. Henry M. Black, Chief of the Supply and Procurement Division, Office of the Chief, Chemical Corps, gave a most interesting as well as informative talk on the various phases of Army procurement and the important role of industry in planning for future emergency.

At this meeting, the following officers were named to serve for the coming year: Charles E. Glennon, president; John E. Bruce, 1st vice president; G. M. Glidden, 2nd vice president; Helen M. Tierney, secretary-treasurer.

On May 3 the Executive Committee met to discuss the program for the coming year's activities. A discussion was held on the functions and responsibilities of the Association in accordance with the new Munitions Board Manual, Annex 47, on industrial mobilization planning. As a result of discussions, it was decided to initiate a membership drive coincident with the opening of the fall round of meetings. Captain Leonard E. Wagner of the Chicago Chemical Procurement District was appointed general membership chairman and an outline of subcommittees to handle and formulate a campaign covering Industrial,

Reserve and Student membership agreed on. Mr. Glidden was designated the official delegate for the Association convention at the Army Chemical Center.

A series of eight regular meetings for the coming year was agreed on and from all indications it is anticipated that activity and interest in the Chapter will be greater than ever.

DALLAS CHAPTER

The June meeting of the Dallas Chapter was held at the Stoneleigh Hotel in Dallas on the evening of June 1st. Aside from enjoying a good roast beef dinner together, the purpose of this meeting was to hear a report by Major A. C. Hamilton, C.O. of the Dallas Procurement District, on the recent national meeting of the Association, and to elect a new slate of officers.

Members were present from Dallas, Bonham and Tyler, Texas. Mr. C. W. Roberts of the H. K. Ferguson Co., Houston, was a most welcome visitor and gave us a report on the organization of the chapter in that city. It was informally agreed that Houston territory should extend to the southern city limits of Dallas, and the Dallas territory to the northern city limits of Houston, thus giving both chapters a shot at all members between the two cities.

Officers elected were William W. Taggart, president; K. G. Irving, vice-president; John Cardwell, secretary-treasurer; William P. Stone, membership chairman.

WILLIAM W. TAGGART

DISTRICT OF COLUMBIA CHAPTER

On the 10th of May 1948, the Washington Chapter of the Chemical Corps Association held



Page Sixty

its annual meeting for election of officers at the shelter in Rock Creek Park. In conjunction with the Mutual Association, OC Chemical Corps, an outing was held, complete with baseball game, horseshoes, badminton, tennis, and dancing, and downright fun was had by all. The main attraction was the baseball game between the Flamethrowers and the Rinky Dinks.

The following officers and directors were elected for the coming year: President, Ludlow King; 1st Vice-President, General John Eager; 2nd Vice-President, Robert Frye; Secretary-Treasurer, R. Donald Rogers; Directors: William Kavanaugh, Helen Gravenkamp, Wayne Fort, LeRoy C. Stewart, John W. Stockett, George Raymond, K. Frederick Plitt, Dr. Henry I. Stubblefield.

The box score for the ball game:

FLAMETHROWERS

	AB	Runs	Hits	PO	A
Wayne Fort, 1b-p	5	3	3	2	0
John Moran, 2b-1b	6	1	3	2	2
George Connell, ss	5	2	2	2	1
Glenn Rhorer, p-2b	6	1	2	1	3
A. E. Miller, lf-c	6	2	3	1	0
Ray Ertel, 3b	2	0	0	1	0
Arnold Fort, 3b	4	1	2	3	1
Jack Hayes, lf	3	2	3	4	0
John Wilmer, c	2	1	1	3	0
R. Buckingham, cf	4	1	1	0	0
General Waitt, cf	2	1	2	1	0
Bessie Mae Rhodes, rf	1	0	0	0	0
Doug Phillip, rf	5	1	2	1	0
TOTALS	51	16	24	27	7

RINKY DINKS

	AB	Runs	Hits	PO	A
R. Deise, lf	5	1	3	2	0
Norma Bussink, rf	3	1	1	0	0
Del Monte, cf	6	1	2	3	1
John Stockett, 1b	5	2	4	10	0
Joe Prentiss, 2b	4	1	1	0	3
D. Kott, 2b	1	0	0	1	2
Crowther, 3b	5	1	2	1	2
Joe La Salle, ss	5	0	2	4	3
McNary, c	5	1	1	3	0
Max Bost, p	4	0	2	2	1
General Waitt, lf	2	0	1	1	0
TOTALS	45	8	19	27	12

Runs Batted In—Hayes (3), Moran (3), W. Fort (2), Miller (2), Phillip (2), Stockett (2), Prentice (2), Crowther (2), Waitt, Rhorer, Connell, Deise, Del Monte, A. Fort.

Two-Base Hits—W. Fort, A. Fort, Phillip, Del Monte.

Three-Base Hits—Stockett (2), Hayes, W. Fort, Moran, Rhorer, Miller.

Home Run—Crowther.

Stolen Bases—Hayes (2), W. Fort, Miller, Phillip, Stockett, Kott, Bost, Waitt.

Sacrifices—Hayes.

Double Plays—La Salle to Prentice to Stockett; Connell to Moran to W. Fort.

Left on Bases—Flamethrowers 10, Rinky Dinks 13.

Bases on Balls—Off Bost 2 (Connell, Fort), off Rhorer 3 (Bussink).

Struck Out—By Bost 2, by Rhorer 4.

Winning Pitcher—Rhorer. Losing Pitcher—Bost.

Umpire-in-Chief—Gates. Bat Boy—Eaton. Water (?) Boy—Daniels.

Time of Game—100 beers and 50 cokes.

Official Scorer—"Billie."

Stars—Batting: Stockett (Rinky Dinks), Hayes (Flamethrowers), General Waitt (both teams). Fielding: La Salle (Rinky Dinks), Hayes (Flamethrowers). Base Running: Bussink (Rinky Dinks), Rhodes (Flamethrowers).

HOUSTON CHAPTER

A meeting of the Houston Chapter of the Armed Forces Chemical Association was held at 8 p.m., Friday, June 4, 1948. C. E. Lyon, Chairman; C. W. Roberts, Secretary.

Meeting was opened by Secretary with a brief description of the purpose of the meeting.

Meeting was then turned over to C. E. Lyon, who introduced the speaker of the evening, Lt. Col. Robert O. Gordon of G4 Section, Chemical Corps Headquarters, Fourth Army, who delivered an interesting talk concerning the objectives, the need, and the value of the Chemical Association. This was followed by a question and answer session during which Col. Gordon spoke of many interesting experiences and observations in connection with an extended tour of duty in the Orient during which time he visited numerous chemical installations in that area.

The business session of the meeting was opened with an explanation of the offices to be filled. A suggested slate was read, with additional nominations requested from the floor. After a spirited session of electioneering (always for the other fellow), the following officers were elected, either by acclamation or a majority vote of those present, to serve until the annual meeting in March 1949: J. A. Barnes, Col. Officers Reserve, President; C. E. Lyon, 1st Vice President; Harvey M. Harker, 2nd Vice President; C. W. Roberts, Secretary-Treasurer.

In accordance with terms of the Constitution, the new officers assumed their respective duties at the close of the meeting.

The Constitution, which had been previously prepared and approved by the temporary Executive Committee and the officers of the National Association, was read and discussed by the

Secretary. The Constitution was adopted by unanimous vote of the body.

Membership applications were distributed to non-members present with instructions for mailing.

Meeting was adjourned, after which an informal discussion was enjoyed by many of those present.

C. W. ROBERTS, *Secretary*

JAPAN CHAPTER

The Japan Chapter of the Chemical Corps Association held a meeting at the Dai Ichi Hotel in Tokyo on 29 April 1948. Fourteen lady guests and twenty-six members were present.

We here in Japan are not in that fortunate position to invite people in industry as guest speakers and so bring us up to date on many subjects. However, a very interesting talk was presented to the group by Lt. Col. William J. Allen, Jr., on the functions of the Economic and Scientific Section, Scientific and Technical Division, GHQ, SCAP. The speaker indicated that this section is responsible for reporting on Japanese research and development, and that no forbidden research is carried on by the Japanese. All scientific missions coming to Japan are coordinated by this section. Personnel in this section also assist the Japanese in problems pertaining to science and technology. Studies are made of scientific potential of Japan, and the Supreme Commander of the Allied Forces is advised accordingly. No doubt this section is contributing a large part toward the recovery of Japan.

It is anticipated that our next meeting will be held in Yokohama.—MERLE Q. DANNETELL.

NEW YORK CHAPTER

The New York Chapter of the Armed Forces Chemical Association held their third meeting of the year on April 19th. This meeting served as a stimulant for the annual meeting which was held at the Army Chemical Center during May.

ATTENDED HOUSTON CHAPTER MEETING



Reading from left to right: Col. Barker; Maj. Gen. A. D. Brice, Deputy Commander, Fourth Army; Col. Jack A. Barnes, USA Ret., and Mr. Fred W. Dallas, Sales Manager, Brown Tool Co.

July, 1948

Page Sixty-one

The attendance at this meeting was approximately 75, and in view of the subject, which was rather exhaustively discussed, industry was well represented.

Col. J. F. Escude and Col. J. R. Rothrock, who are administering the Industrial Mobilization Plan as it exists today in the New York District of the Chemical Corps, presented an excellent treatise on the present and future concepts and objectives of the Industrial Mobilization Plan.

The fourth meeting for the year will be held in June, at which time officers for the coming year will be elected. Individual notices of this meeting will go forward to all members.

JEROME F. MCGINTY, *President*

PITTSBURGH CHAPTER

On Tuesday, March 30, 1948, the Pittsburgh Chapter of the Chemical Corps Association held its regular meeting in the Cathedral of Learning, University of Pittsburgh. The speaker of the evening was Dr. John Geise, Chief Historian of the Navy Department, Washington, D. C. Dr. Geise, a specialist on the History of Science and Industry, has been on a leave of absence from the University of Pittsburgh since 1943 directing a staff of experts in the compilation of the History of the Development of the Technical Items of Procurement in the Quartermaster Corps, the Corps of Engineers, and the Navy Department.

At the annual business meeting held April 27, 1948, the following officers were elected for the coming year:

Col. George L. Smith, President; Lt. Col. W. C. Weltman, 1st Vice President; Capt. Henry J. Behrenberg, 2nd Vice President; Major J. F. Matejczyk, Secretary-Treasurer.

J. F. MATEJCZYK, *Sec'y-Treas.*

ROCHESTER CHAPTER

The fifth and last meeting of the 1947-48 season was held at the University Club on May 5th. A business meeting followed the dinner. A review of the year's activities indicated that all were pleased with the four previous meetings, which consisted of (1) a clam bake with families in attendance; (2) an informal talk by Dr. William A. Noyes, Jr.; (3) a combined meeting with the Rochester section of the American Institute of Chemical Engineers, with Mr. L. Wilson Greene as the speaker; and (4) a joint meeting with the 164th Composite Group, Navy and Army Medical and Dental Reserve Units, at which Col. J. R. Wood was the principal speaker.

Page Sixty-two

Officers for the next season were elected, with the following results: Lt. Col. Ingalls S. Bradley, president; Capt. Harold H. Wright, vice president; Capt. Jas. K. Littwitz, secretary-treasurer.

Plans were discussed for next year's program and all are looking forward to plenty of activity behind such splendid leaders.

The last fiscal meeting of the Rochester Chapter was held at the University Club of Rochester on May 5, 1948.

The meeting was called to order by our retiring president, Major Ernest Mohr. The minutes of the last meeting were read and the treasurer's report given, and we proceeded with the old business on hand.

In the matter of old business, the specifications which Mr. Wilson Green had forwarded to us for comment and review were collected. The entire group appreciated the opportunity of reviewing these specifications. During the discussion a plan was evolved whereby it was thought that a more efficient and specialized review could be obtained.

In the matter of new business, the following officers for the coming fiscal year were nominated and elected: Col. Ingalls Bradley, president; Capt. Harold H. Wright, vice president; Capt. James Littwitz, secretary-treasurer.

The meeting at Edgewood Arsenal was discussed and it was brought to the members' attention that those attending this meeting should fill out the form as contained in the April issue of the *Journal* and forward same to the proper parties.

Col. Elwood Snyder was given the voting privilege for the Rochester Chapter at the National Convention.

CAPT. HAROLD H. WRIGHT,
Sec'y-Treasurer, retiring

ROCKY MOUNTAIN CHAPTER

Two dinner meetings have been held since March, our last being held for members, friends and ladies on May 13. At the April meeting our new officers appointed committee chairmen and assigned each their mission for the year. Preliminary reports from the committees were made at the May meeting. The attendance at this meeting was gratifying and the enthusiasm displayed leads us to believe that Rocky Mountain

Armed Forces Chemical Journal

July

Chapter No. 1 will soon be again as active as it was when it was first formed two years ago. Plans were made for our next meeting, which is to be held on June 24, and will be another "Ladies' Night."

The chapter wishes to extend congratulations and best wishes to the new officers of the Association.

WESTERN NEW YORK CHAPTER

Our next meeting will be held late in June or early July, at which time a new slate of officers will be elected.

Chemical Association members from this area who attended the National Meeting at Edgewood included Mr. James N. Vermilya, Col. Clifford L. Sayre, Dr. Noah S. Davis of the Buffalo Electro-Chemical Co., Mr. Robert A. Baker of the Hooker Electrochemical Co., Mr. Robinson of the Friend Manufacturing Co., and Mr. and Mrs. R. B. McMullin.

Colonel Sayre, our present Chairman, gave a talk on May 12th before the A.S.M.E. in Buffalo on the subject of industrial mobilization.

FREDERICK A. GILBERT

WILMINGTON CHAPTER

The Wilmington Chapter had another get-together on April 1st. At the meeting, those present had the pleasure of hearing Dr. Ruegerberg of Edgewood Arsenal describe in a formal talk chemical development work done at Edgewood on "Certain Organic Compounds of Sulfur." Also the chapter was very fortunate to have at the meeting as guests Colonel Ludlow King and Colonel Harry Kuhn. Both Colonel King and Colonel Kuhn gave short talks covering most recent developments in Washington pertaining to the Chemical Association and elaborated to some degree on the program planned for the annual Association meeting at Edgewood the latter part of May.

A number of the chapter members attended the annual Association meeting at Edgewood on May 20, 21 and 22. According to all reports, they enjoyed every minute of their stay.

The chapter's next get-together is planned for sometime in the early fall. The particular program for this meeting will be reported at a later date when it has crystallized.

H. S. MCQUAID, *Sec'y-Treas.*



DESIGNERS AND BUILDERS OF

Complete Porcelain Enamel Plants
Furnaces
Kilns

MANUFACTURERS OF

Porcelain Enamel Frit
Clays
Special Refractories
Color Oxides and Glaze Stains for
 Porcelain Enamel
 Clay Products
 Glass
 Plastics
Metal Cleaners and Metal Cleaning Systems
Industrial Finishes
Paint Driers
Chemicals
Electrical Heating Elements and Controls

FERRO ENAMEL CORPORATION

4150 East 56th Street

Cleveland 5, Ohio

The Secretary's Corner

By FRED M. JACOBS, *Secretary-Treasurer*

A regular Armed Forces Chemical Association meeting was held on June 15 at national headquarters with Col. Harry A. Kuhn presiding and with almost a full attendance of all the new members of the Executive Committee.

On the agenda were many subjects of much interest to each and every member of the Association. A discussion of the book, "The Chemical Warfare Service in World War II," which we have recently published, took considerable time.

Mr. Rogers, new secretary of the D. C. Chapter, was put in charge of selling the book in the office of the Chief, Chemical Corps. Copies of this book were sent out to various institutions for review. Of this we will hear later.

It was decided that a directory of our members and officers be incorporated with the by-laws.

Colonel Kuhn announced that Mr. George B. Dryden has been appointed special adviser to the President.

After discussion of area representation in the sections of the country, the following motion was made by Mr. Pledger: "That the Executive Committee authorize the President to appoint area representatives in the sections where his judgment indicates them to be necessary." This was seconded and passed unanimously.

New membership cards and letterheads were presented to the committee.

The discussion of the budget was deferred until next meeting.

A discussion was held on medals and awards to members of the Association. Mr. Jacobs was charged with coordinating his ideas with those of Mr. Morrill, and to present those ideas to the executive committee at the next meeting.

The directors-at-large, with the exception of one, were reported. After a discussion, the following motion was made by Mr. Pledger: "That a directors' meeting be held on August 30, at 5 p.m., cocktails and dinner, during the American Chemical Society meeting, at the Army and Navy Club, cost to be borne by the directors." This was passed unanimously. This meeting is to be publicized in the July *Journal*. A room has been obtained by the Association for the duration of this meeting, at the Statler, with the D. C. Chapter staffing the room. The room to be obtained from Monday through Wednesday. Passed unanimously.

Col. Kuhn reviewed the Reserve Officers' membership campaign now being held by the headquarters, and the committee stated that he should get out a directive to the directors, lining up their duties, and he should build up a group membership.

A list of the group membership will be made for circularization among the group members and chapters.

One of the matters thoroughly discussed was that of the duties of the 5th vice president and his deputy, Mr. Hepburn Chamberlain, who should help the chapters with their meetings.

Col. Cummings discussed his mobilization planning committee. A further report on this committee will be presented at the next meeting.

Mr. Alec S. Sheard kindly consented to visit the Detroit area and Cincinnati in the interest of the Association.

MARION CONTRACTING CORPORATION

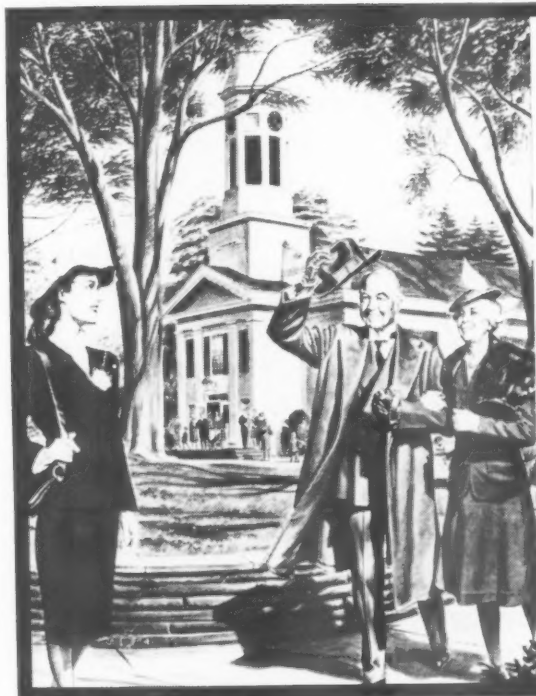
Specialists:

- **Processing**
- **Freight Handling**
- **Packaging**
- **Renovation**
- **Salvage**

P. O. Box 632
Arsenal, Arkansas
139 East Center Street
Marion, Ohio

We are here to serve...

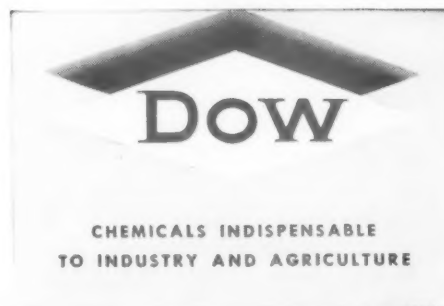
Men have done big things in chemistry by working together for the common good. And there is reason to believe the future holds forth promise of still greater accomplishment. The Dow Chemical Company, which has had a substantial share in past chemical achievements, will continue to serve the future, producing chemicals for man's direct benefit.



DOW HAS A STAKE IN PROMOTING LONGER LIFE

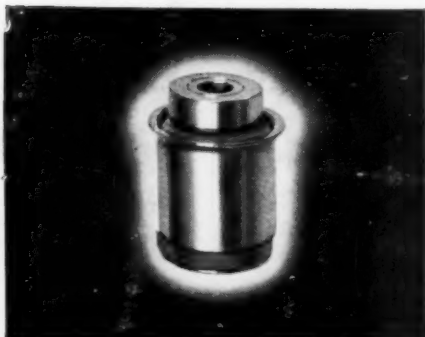
Today, thanks to modern medicine, modern sanitation, and new drugs of amazing effectiveness, the average life expectancy is better than 63 years. Dow manufactures approximately 100 chemicals fulfilling the requirements of pharmaceutical manufacturers, who produce medicines important to life and longevity. Included in this number are seven of the eight Amino acids recently established as essential for the adult person. Dow is continually developing new and useful chemical products as a result of its extensive and active research program in the field of fine chemicals.

Thus does The Dow Chemical Company serve the public welfare as well as Industry and Agriculture, helping to maintain and raise still higher the American standard of living. And, just as was the case in the "early days", quality and the scientific method are still of first importance with Dow.

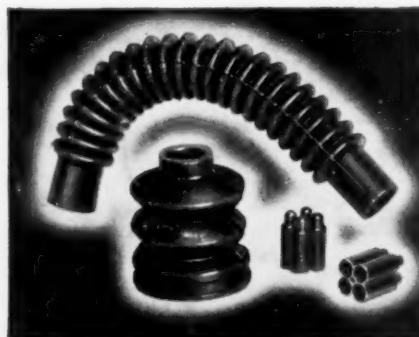


THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

Rubber Engineered by GENERAL



SILENTBLOC Vibration Mountings give engineered accuracy in control of vibration and shock load in motors and equipment.



MOULDED RUBBER parts of any size, shape and type of rubber, to meet your specifications for accuracy and performance.

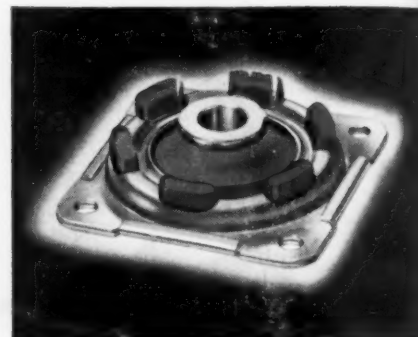
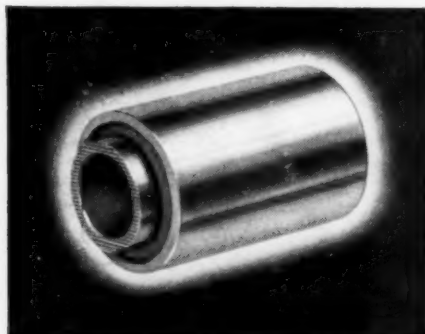
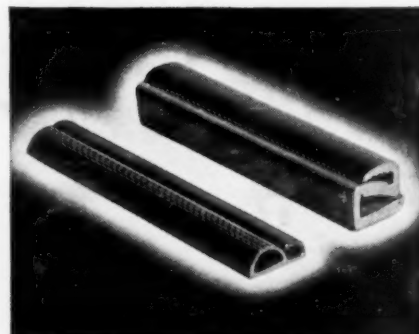


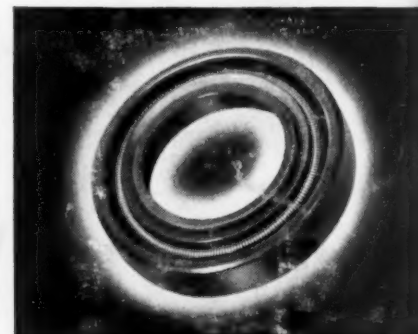
PLATE MOUNTS of any metal and rubber, for vibration isolation in aircraft, radio, electrical equipment, instruments.



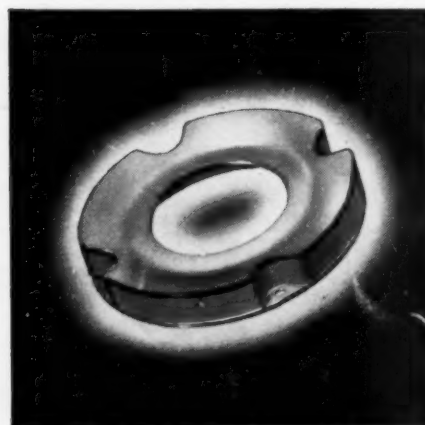
SILENTBLOC BEARINGS for oscillating equipment—need no lubrication, work silently, long lasting, unharmed by dust or liquid.



EXTRUDED RUBBER in any solid or hollow shape, made accurately to your specifications from any type of rubber.



OIL SEALS for lubricant and hydraulic applications, engineered to meet your needs in efficiency and long service.



RUBBER-bonded-to-metal parts of all kinds, made to specification. In ROTOL drive, shown at right, rubber is bonded to metal.



SHOWN HERE are exploded and assembled views of ROTOL gearbox drive. On many parts, tolerance was held to ten-thousandths.

ROTOL gearbox drive for Rolls-Royce aircraft engine, engineered by General. Rubber coupling cushions starting torque and absorbs torsional vibrations due to engine impulses, minimizing metal shaft fatigue. A notable example of General's skill in precision engineering.

MECHANICAL GOODS DIVISION • WABASH, INDIANA

THE GENERAL TIRE & RUBBER CO.

Makers of America's Top Quality Tire